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Louisiana Conservation REVIEW

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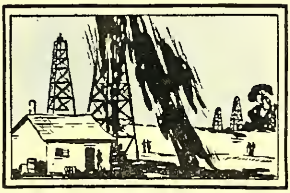

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FARMERS OF FORTY CENTURIES

Published Quarterly by the
DEPARTMENT OF CONSERVATION

APRIL
1935

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VOL. IV NEW ORLEANS, LA., MARCH, 1935 No. 6

Safety First for Fishermen

A RECENT Louisiana tragedy that cost the lives of four business men who had set out to enjoy a fishing trip should bear a serious lesson for everyone who goes fishing for pleasure.

Few sportsmen sufficiently realize the hazards to which they expose themselves when, in small power-driven boats, they set forth without life saving equipment. Fewer still are aware, that by so doing, they specifically violate a Federal law, a law designed to eliminate, as far as possible, this very type of disaster. Federal regulations require that every motor driven craft, whether its power be the usual type of marine engine or some form of out-board motor, must accord in its equipment with certain standards designed for the safety of the occupants of such craft. These federal regulations, which are so widely ignored until the unexpected arrival of a Federal Navigation Inspector and the imposition of a few fines by a Federal Court bring them sharply to mind, read, in part, as follows:

"Regulation of Motor Boats.

"Life Preservers and Life-saving Devices.

"On Motor Boats Not Carrying Passengers for Hire.

"13. Every motor boat not carrying passengers for hire must have life preservers or life belts or buoyant cushions or ring buoys or other device, which should be of types sufficient to sustain afloat every person on board. This includes members of the crew, children, and babies. If practicable, the purchaser should consult qualified persons before purchasing life-saving devices. In any event he should satisfy himself that such devices are composed of material known to be suitable for the purpose intended.

"In addition the department authorizes life preservers and buoyant cushions for motor boats not carrying passengers for hire under the following conditions: Each life preserver or buoyant cushion shall be capable of sustaining afloat for a continuous period of 24 hours an attached weight so arranged that whether the said weight be submerged or not there shall be a direct downward gravitation pull upon such life preserver or cushion of at least 20 pounds. If a buoyant cushion is furnished for more than one person, its capacity must be proportionately greater.

"No such life preservers or buoyant cushions stuffed or filled with granulated cork or other loose granulated material and no pneumatic life preservers or cushions will be approved."

(Continued on Page 44)

Published quarterly by the Department of Conservation in the interest of protection and proper utilization of Louisiana's natural resources.

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New Light on Duck Behavior

SCIENTIFIC attack upon the innumerable problems of game preservation has been proceeding with progressive impetus during recent years. Elsewhere in this number of the *Louisiana Conservation Review* will be found an able address delivered by J. N. ("Ding") Darling, Chief of the Bureau of Biological Survey, in which he trenchantly surveys the duck situation, a virtual, national, wild life emergency.

Other recent investigations, the results of which have just been published by the Bureau of Biological Survey, will be of interest to all duck hunters. That Bureau has been carrying on, for a number of years, a program of bird banding to study the movements of birds. Applied to game birds, particularly migratory water fowl, these bird banding operations have revealed some surprising results. Frederick C. Lincoln, Naturalist of the Biological Survey, has by these means discovered that birds evidently regard as their home, not the place where they were born, but the place where they first nest, the locality where they first set up house-keeping for themselves. This conclusion, which appears to be based upon a mass of sound evidence, applies to waterfowl as well as to other birds.

A wild Common Mallard near Antioch, Nebraska, hatched over one hundred ducklings between 1927 and 1933. These ducklings were banded, yet not a single one was known to return to nest anywhere in Nebraska, the State where it was hatched, although individuals of these broods were recovered as far south as Arizona, Texas and Louisiana, and as far north as Alberta. House Wrens provided another example. Hundreds of adult and fledgling House Wrens were banded at a station in Ohio, and though each season more than 42 per cent of the adult birds taken have been old-timers, only approximately two and one-half per cent of the young have been retaken there in subsequent years.

(Continued on Page 24)

State Parks Commission of Louisiana Begins Its Important Duties

THE recent publication by the State Parks Commission of Louisiana of its First Annual Report to His Excellency the Governor marks an important step in Louisiana's progress. The State Parks Commission of five members has the following roster of officers: Robert S. Maestri, Commissioner of Conservation, Chairman; John Klorer, Chief State Engineer, Vice-Chairman; Nicole E. Simoneaux, Secretary. The two additional Commission members are: A. P. Tugwell, Chairman of the Highway Commission and Lucille May Grace, Register of the State Land Office. James P. Guillot, Secretary of the Department of Conservation, is Treasurer of the Commission.

The appointment of the State Parks Commission constitutes the achievement of a constructive state movement never before accomplished in Louisiana. In his report, Mr. Maestri, Chairman of the State Parks Commission, discussing the objectives and the activities of State Parks in Louisiana, says in part:

"Probably one of the most striking characteristics in the development of American recreation during the present century has been the manner in which Americans have become 'out-of-doors minded.' Undoubtedly one vigorous and effective influence in initiating such a general attitude was President Theodore Roosevelt, whose personality, public utterances and writings conveyed for the first time to so many of his fellow citizens the realization that America's heritage of the out-of-doors is something that must be fought for if it is to be preserved.

"Broad influences in our civilization have also greatly accelerated the growth in popularity of the out-of-doors as a field for recreation—the availability of cheap and speedy transportation, the charm of distant scenes conveyed by feature pictures on the motion picture screen, the extension, through nature societies and many others agencies, of intelligent interest in wild flowers and wild birds, not as objects to be destroyed and collected, but as enchanting living subjects for study in their natural setting.

"All these have played their part in extending the interest in and the appreciation of our out-of-doors. The expansion of American industrial life, the growth in size of our cities, and the enormous increase in the numbers of those who go afield, have made increasingly important the need of some place to which lovers of natural scenery and wild life can go to enjoy recreational hours without interfering with the rights of fellow men. It has become abundantly apparent that parks, National Parks, State Parks and City Parks, are the only adequate answer to this demand. The Parish Fairs, which play so important a part in the community life of the State, especially require State Park facilities to make possible the widest and best realization of these functions.

"Louisiana's Adaptability for State Parks

"The State of Louisiana has had a particularly significant place in the American scene, providing as it does the winter home for literally millions of wild birds, including an astonishingly large proportion of the North American migratory water fowl. Louisiana has recognized this responsibility by contributing greatly to the preservation of wild life. Extensive preserves have been established by State action and by private donation, game refuges which, under the careful jurisdiction of State and other agencies, have given haven, year after year, to our wild life.

"Louisiana, further because of the character of its people, is especially a state wherein State Parks would be most fully appreciated. Inheriting a keen understanding of the pleasures of the field, Louisianians, perhaps more than any other State's citizens, have a natural delight in fishing and hunting. Nature has provided for them in a remarkable manner, but it is inevitable that Nature requires some cooperation in making such facilities properly available to all. The conflict of the recreationist with the rights of private property becomes inevitable.

"The history of no State can excel in length and colorful interest that of Louisiana, whose successive rule by France, then Spain, then France again, the United States, the Confederacy and again the United States, deserves recognition in the establishment of appropriate State Parks. The name of Louisiana, that vast original territory out of which subsequently, in all or in part, no less than thirteen States were carved, persists today in this State alone, an appropriate territory wherein to commemorate the greatest, wisest and most peaceful territorial acquisition in the Nation's history.

"It was, therefore, to serve this State-wide need that the State Parks Commission of Louisiana has been created......

"However, financial support from the State Government must be provided either by direct or indirect State Appropriation, in addition to all possible philanthropic assistance on the part of public-spirited groups or individuals.

"Experience has taught that the success of any State Parks Program depends upon the cooperation of not two, but several State agencies, all of which in their jurisdiction or their interests touch upon one or several aspects of the problem. The creation of the newly established State Parks Commission was carried out in wise

(Continued on Page 44)

TENSAS RIVER

Wild Life Refuge and the Cotton Planter's Lost Domain

By BULOW W. MARSTON
Shreveport, Louisiana

THE purpose of this article is to describe a trip by boat with a companion down the Tensas River, through a country perhaps the most primeval in the South. During the trip, which consumed six days, we camped each night on the side of the river. The distance travelled was approximately seventy miles, from a point where the Shreveport-Vicksburg Highway crosses the river (Quebec) to another point (Newlight) south where another highway crosses the river (Winnsboro-Newellton Highway). The river has six great bends respectively named Greenleaf, Anders, Disherroom, Hunters, McGill and Frisby. The circle around some of these bends is as great as twenty-five miles, while it would be perhaps only two miles across. The river is about fifty feet wide, with a lane of daylight overhead between the towering trees on either side. It makes an attractive situation, and gives one the impression of some jungle in a far-away, tropical country.

We used a twenty foot skiff with a three and a half horse-power motor (which consumed only seven gallons of gas), a small tent, and the usual camp equipment, with good maps and compasses; so that we had no trouble in knowing our position all the time.

The interest in this trip was three-fold: First, the whole distance covered was through the Louisiana wild life refuge; second, the area is also one of the finest hardwood forests left in the country, comprising about 250,000 acres timbered with oak and gum trees of enormous size; third, the same section was at one time (preceding the War Between the States, when it was abandoned) perhaps the greatest cotton growing area in the South.

We did not see any deer from the river bank, but their tracks could be found wherever we camped. The number of deer undoubtedly has increased since the area was made into a game preserve—not so much, though, as in Pennsylvania where they had to be killed off because there were too many. We met one native resident, however, who told the writer that the deer cleaned up his pea patches every year, and his only method of keeping them out was to kill one of them and scatter the entrails over the field to scare away the other deer. This, no doubt, had to be done frequently during the growing season of three months. We also saw evidence of numerous flocks of wild turkeys, where they had scratched away the leaves. We flushed many droves of mallard ducks, and there are squirrels by the thousand.

We tried fishing with little or no success, as there was too much fresh water in the river. We did capture one cat-fish, however, and after it had been in our boat one and a half hours, the cook cleaned and dressed the fish, laid it on the back seat of the boat, and—believe it or not—it fluttered off into the river, leaving us disappointed that we could not have cat-fish courtbouillon for supper.

The wild life refuge is diligently policed by four wardens, two of whom we understand are furnished by the Department of Conservation of the State, and two by the Singer Sewing Machine Company, that owns about 110,000 acres of the hardwood forest. We met one warden, who impressed us as being industrious and courteous, and we were required to identify ourselves.

As indicated, the timber is principally oak and gum, a considerable portion of which is second growth timber, especially on the higher ridges where the early settlers had the land in cultivation before the War Between the States. This second growth timber is of the same fine quality as the virgin timber, only smaller. We were impressed with the fact that a great many of the older trees of large diameter are dying in the tops, and no doubt should have been converted into lumber years ago. The writer understands that the Singer Sewing Machine Company purchased this large body of hardwood timber to use in the manufacture of their sewing machines, and they have since converted their machine into an almost all metal construction; so what they eventually will do with the timber remains to be seen.

The interesting part of this trip (since the writer is a cotton planter) is the fact that a large part of this whole stretch of country was once a tremendous cotton growing domain, now completely overgrown by a forest. We were reliably informed that Madison Parish, preceding the War Between the States, made 135,000 bales of cotton in one year. Lyle Saxon, in his book on Old Louisiana, tells of the emigration of the cotton growers from the poor lands of Virginia, Georgia, and the Carolinas to this section as early as 1835, and the records show that the lands out on the Mississippi River, where there was steamboat transportation attained a value of three or four hundred dollars in gold per acre. During this period New Orleans probably received a great deal of the impetus that has since made it a great city. The best drained lands are directly on the river front, and it is easy to tell the part that was in cultivation by landmarks left by the old settlers. At one place, a long row of cisterns with piles of brick between where chimneys once stood was evidently the slave quarters of some big plantation. Deep cuts into the banks of the river at intervals indicate where drainage canals had emptied the rain-water into the river off the cultivated lands. There were small levees, two or three feet high, that meandered along the river banks for miles. The ditches, the hand-made levees, and the clearing of the land in those early days must have represented many months hard work of dumb, driven slaves, all to come to naught and be abandoned as it is at present.

It is easy to surmise that the clearing of the timber on the upper reaches of the Mississippi River increased the hazard of overflow, the overflows evidently heightened the malaria, and, with the coming on of the war and the freeing of the slaves, made physical and financial problems beyond the endurance of these pioneers. In fact, we understand this section got so unhealthy that at one time it was known as the "grave-yard of Louisiana."

The last one of the bends in the river in the seventy mile stretch we travelled is said to contain 25,000 acres, and was the plantation of one man, a Mr. Frisby. The foundation and some of the walls of this land-owner's enormous brick home are still standing, overgrown by trees. Twenty-five square brick pillars ten feet high, upon which the house once rested, indicate the ground dimensions covered by the house and the owner's effort to get it above over-flow waters. The long brick walk from the house to the river front must have been where the master and mistress got into their carriage when they drove away to visit their neighbors. It is reported that this large land-owner was killed by his brother-in-law in a knife fight. There is a tradition that when the war broke out he had sixty thousand dollars in gold which he hid somewhere in the woods. The story goes that he bored an auger hole in a young gum tree and drove the barrel of a rifle through the tree with the barrel pointing toward the spot where the money was buried. It is unnecessary to say that up to this time the gum tree has not been found, and some of the natives have the idea that in seventy-five years

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Picturesque Ruins on an Old Tensas Bottomland Plantation Now Overgrown by the Encroaching Forest.

The Wildlife Situation in the United States and Its Remedies

By J. N. Darling, Chief, Bureau of Biological Survey, U. S. Department of Agriculture, at the Twenty-first American Game Conference, in New York City.

I WISH it were possible to talk about many things at the same time. Our problem as sportsmen and conservationists is by no means limited to ducks. And while this session is dedicated to the discussion of the migratory waterfowl, the ducks are only one branch of the whole animal kingdom, which needs urgent and immediate attention. The same neglected precautions which have brought the migratory game population to a crisis are also responsible for the gradual depletion of all our wildlife resources, some of them almost to the point of extinction and many of them to a very narrow margin of existence.

There is not now and never has been a national policy for the conservation of wildlife resources. There is not now and never has been a Government agency entrusted with the prerogatives of general wildlife conservation. There is not now and never has been a Federal plan for the maintenance and preservation of the tremendous economic and social values inherent in the fur, game, and fish species. Such a national policy is badly needed for all game as well as ducks.

The same thing happened to our wildlife resources that happened to our national forest resources. It was happening at the same time when this continent was subjugated to the interests of commercial civilization. Both receded at an alarming pace before advancing settlement. The one great difference between forests and wildlife resources was that thirty years ago Theodore Roosevelt and Gifford Pinchot saw what was happening to forests and prescribed a national remedy. A systematic plan of conservation and restoration of forests was established, and a Government agency was provided with funds for its custodianship.

To this day no Administration in the history of this Government has considered the conservation of wildlife resources from a national viewpoint. Such refuges as have been provided have been the result of spasmodic hysteria, local in character, and unstudied as to the measure of its efficiency. Our magnificent endowment of wildlife species—including fur bearers, game, and beneficial bird life—has never even remotely entered into our

A typical flock of Pintails rising from a western Cameron Parish duck marsh.

plan of national conservation.

Game has remained the orphan child, without asylum, and has subsisted on such crumbs as fell from the table of forestry, irrigation, reclamation, and national-park administration.

Bison, antelope, elk, mountain sheep, prairie chicken, wild turkey, marten, fisher, beaver, deer, and ruffed grouse have all had their narrow escapes and lived on what the neighbors sent in. At this moment the hereditary game ranges of some of our most valued species are but for our prayers about to be shut out forever from 80,000,000 acres of our public domain by dedication and withdrawal of this vast area to controlled public grazing, without any provision for game upon it.

Pintails, Teals, Coots and Boat-tailed Grackles feeding on a Louisiana State Game Preserve.

So many of our game and wildlife conservation activities begin at the post-mortem stage. There is no authorized Government agency to which has been delegated the responsibility of custodianship. Game has no place to live in this broad land and call its own.

"How much space and where" should game have to satisfy the public needs cannot longer be left to chance. It is, in my judgment, the hour of decision.

Do you realize that in all the millions of Government expenditures during these last three years not one thin dime was appropriated specifically for wildlife restoration—that the only money actually available now has to be sucked through a straw from someone else's barrel? Forestry has had its hundreds of millions and has had for years. Erosion control, reclamation, C. C. C., P. W. A., and all the heavily endowed agencies have been taken care of. Saving soil, saving trees, saving water, cutting trails, and building roads have been taken care of, but game was not a part of the vast program for conservation.

Our eight and a half millions being spent now for duck-mating areas and refuges was secured only because we were able to show that by spending this money to do something for the ducks, we could at the same time aid distressed agriculture and the unemployed.

Part of a flock of Blue Geese in flight over Cameron Parish marshes. The Blue Goose winters almost exclusively on the Louisiana coast.

Our endowment of wildlife resources is the bow-legged girl of the village. Every one sympathizes with her but never asks her to the picnic.

It is time for our sportsmen and game conservationists to quit quarreling among themselves and unite on something more fundamental than local issues and local benefits. We have more quarreling factions and faiths than the churches. There is no group of people in this country to whom the preservation of our game and other wildlife means so much as those represented in this gathering. It is time to think soberly in terms of preservation rather than of post mortems.

A group of water fowl feeding in their typical Louisiana winter home.

We need a nation-wide plan to make refuges of the areas that belong to the wildlife, areas that will give the birds and animals a place to live, to nest, and to rear their young in safety. Every year the destruction of the natural environment of our game species causes more reduction in the population than any other one cause. We need an army of sportsmen to fight for the defense of the natural environment, and for the rights of wildlife to be adequately represented in the conduct of our Government.

The Biological Survey has made a start on the job of restoring wildlife areas. We have five big-game refuges and a miscellaneous lot of waterfowl and bird refuges scattered hit and miss over the country, their location in the past being largely dictated by local rather than national viewpoints. A systematic study is now being made of other suitable areas that it is hoped may be made available by Executive orders, purchases, donations, or by other means. We have already selected 45 areas in the public domain that we want set aside primarily for the use of wildlife under the Taylor Act. Other areas are being selected as rapidly as we can get the required information together.

Blue Geese and Snow Geese rising from their winter home in the Louisiana coastal marshes.

These areas are more valuable for production of game, fur-bearers, and other wildlife than for production of cattle and sheep or for other agricultural purposes. Our wildlife should have first right there, and sportsmen should get their shoulders to the wheel and work to this end. Strong, organized forces are at work day and night fighting for the rights and privileges of the stockmen. If we want our wildlife to have a fair break on these 80,000,000 acres that are to be included in grazing administration plans it must be done right now or it will be forever too late. The areas will be set up irrevocably and forever for livestock production unless effective action by sportsmen and conservationists is successful in securing them for wildlife.

We have a vast program under way to secure for waterfowl, large areas that have been ruined in the supposed advancement of agriculture, and in futile reclamation and drainage attempts. These areas are being carefully selected and recommended for purchase under submarginal-land and drought-relief measures by the agencies handling these funds. Some are now under contract of purchase, some are under options, and others will be acquired by declaration of taking or by other means. This work is being pushed with all possible vigor, and the program needs your united support to make it win on a proper scale.

Now, as to the ducks. I want to divest myself of any suspicion that I think I know all about them. No one does. The amazing thing to me is that, with a $500,000,000 industry to maintain, no one should have started long ago to put the duck business on a factual basis. No one knows whether we kill 12,000,000 and hatch 11,000,000 a year or whether we kill 24,000,000 and hatch 10,000,000. That, obviously, is the first thing to determine in looking to the future of hunting of migratory waterfowl.

Planting duck food on the State-maintained Marsh Island Wild Life Refuge.

This year the Biological Survey has set its hand to that job as intensively as our constricted budget would allow.

Beginning with the spring migration last year, the ablest observers on the staff, plus such competent volunteers as were available, devoted all their time to determining the conditions and duck population in the nesting areas.

Intensive observations were made on all the flyways during the fall migration just passed.

Yesterday began a winter count. Men of practiced ability are at this moment stationed from Long Island to Yucatan, to report simultaneously on the winter resting grounds of ducks and geese.

The spring flight will be closely watched and the 1935 nesting conditions observed. On the tabulated results of these observations the Biological Survey will make its recommendations to the Secretary of Agriculture and the President for next year's migratory-waterfowl hunting regulations.

The first consideration will be the preservation of a safe margin of population among the ducks, I assure you.

There are many things to consider beside the thought of a peremptory closing of the season. I am not going to be rushed into any conclusion. I am going to do a square job. I intend to put this duck business on a bookkeeping basis, with stock on hand governing the extent of consumption to be permitted the public.

One of our big problems is enforcement. With the whole United States to patrol, the Biological Survey has had one-third as many men as New York has traffic cops on Broadway. With a 27 per cent cut in the Biological Survey budget, we must increase our vigilance and set up the national bookkeeping on migratory waterfowl.

Even if all the members of the Biological Survey were four times as migratory as the ducks, we couldn't cover all the ground that should be covered, but we are doing our best. Do not presume, however, that with fifty-nine law-enforcement officers in the whole United States we can enforce a closed season on migratory waterfowl without heavy losses to violators. So if you pass resolutions see to it that these resolutions demand the appropriation of money for law enforcement.

Ninety per cent of the reports are that the ducks are in a bad way. That fact seems well established. Premonitions of this crisis went unheeded in the middle '20s. In 1931 we had a thirty-day season. In 1932 the protests of sportsmen resulted in a return to the sixty-day season, which was repeated in 1933. The winter of 1933 was more destructive than any one at the time realized. Starvation and freezing accounted for many more ducks than was at the time realized.

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Membracid Girdling of Young Black-Locust Seedlings in Southern Louisiana and Mississippi

By Thos. E. Snyder, Senior Entomologist, Bureau of Entomology and Plant Quarantine, and H. N. Lamb, Pathology Technician, Emergency Conservation Work, assigned to the Bureau of Plant Industry, United States Department of Agriculture, at the Southern Forest Experiment Station, New Orleans, La.

DURING the last few seasons there has been a heavy mortality of young black-locust seedlings at the Louisiana State Nursery near Woodworth, La., where the locust tree is out of its natural range. Prior to 1934 these seedlings had been grown on the same site since 1925. The nursery was surrounded by young second-growth pine, red and blackjack oak, weeds, and grass. According to records in the office of the Division of Forest Pathology of the Bureau of Plant Industry, in 1929 there was a loss approaching 50 per cent by girdling, and seedlings died in a similar manner in the subsequent years. In 1933, the one other year for which we have records, the nursery was planted to grow 200,000 black-locust seedlings, but it was only possible to raise 25,000 to a stage where they could be pulled for planting stock. Various theories were advanced to explain the death of the young trees, such causes as sun scald, fungus, etc., being suggested, but the actual cause remained unrecognized until 1934.

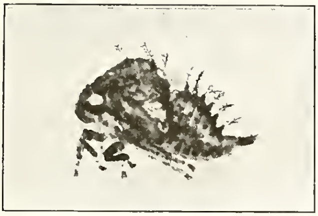

Fig. 1. Mature nymph of tree hopper (Stictocephala festina) which damages black-locust seedlings. (Enlarged seven times.)

In the spring of 1934 the nursery was moved to a new site about one mile from the 1933 location. The nursery was fenced in and surrounded by about the same type of vegetation as before, and a strip of grass and weeds separated the black locust from the pine (slash, loblolly, etc.) plantings. There was a trough irrigation system by which the sandy-clay soil was watered. The locust seed was planted late in May. It was not treated to facilitate germination, and in consequence there was a retarded and spotty germination. By the latter part of July about ten per cent of the trees had been killed.

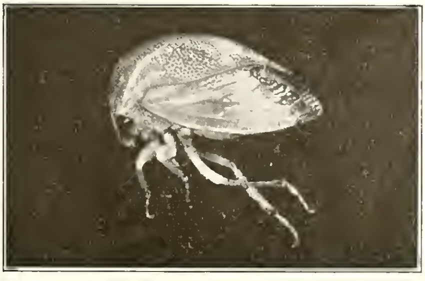

Figure 2. Adult tree hopper (Stictocephala festina) which damages black-locust seedlings. (Enlarged 6½ times.)

At this time the junior author discovered that the young black-locust seedlings were being girdled by a tree hopper, or membracid. This insect, later identified as *Stictocephala festina* Say,[1] feeds in its nymphal stage on the tender young stems of the seedlings, usually at about one to two inches or more above the ground line, making a circle of feeding punctures around the stem. It is not easily found during the heat of the day. The young nymphs are a dirty brown color, and the dorsal area is covered with stout, branched bristles. (Fig. 1.) As the winged stage is attained, the body color changes to green. Adult membracids (Fig. 2) feed in a manner similar to that of the nymphs, but of course can fly.

As a result of the feeding of this insect, the black-locust plants are girdled (Fig. 3) and many of the younger ones wilt and die immediately. As the plant grows older and the stem becomes woodier, a gall-like swelling or callus is formed above the girdle (Figs. 4 and 5), and later, when its need for food increases, the plant dies of starvation. Sometimes the plant remains alive but breaks off at the girdle when it is pulled for planting. Some plants show two girdles, one above the other. In both the 1933 and the 1934 plantings, at different sites, a few of the hardier plants survived the girdling by this tree hopper.

A few straggling trees, still growing on the site of the nursery in 1933, were examined in August, 1934, to determine if the killing of trees in 1933 was due to this tree hop-

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[1] Wildermuth, V. L. Three-cornered alfalfa hopper. Jour. Agr. Research 3: 343-362, illus. 1915.

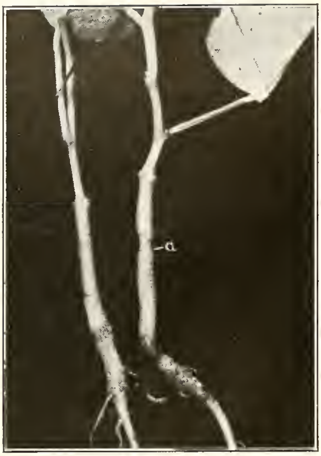

Figure 3. Immediate constriction (a) about tender, very young stems of black-locust seedlings, caused by feeding by a tree hopper nymph.

per. The presence of definite gall-like swellings on these trees indicated that such might have been the case. Probably poor soil, drought, etc., also caused some of the loss.

On August 3, 1934, the writers were able to obtain both nymphs and adults of the tree hopper in the black-locust nursery in its new site during the early morning and evening. Adults were more numerous in the nursery beds than on weeds or on oak sprouts outside the nursery, as was determined by sweepings of various types of vegetation in all these locations. As a rule, the tree hoppers flew only when the plants were disturbed. One important fact stands out, however. No nymphs were found outside the nursery, and in the nursery they were found only on young black-locust seedlings.

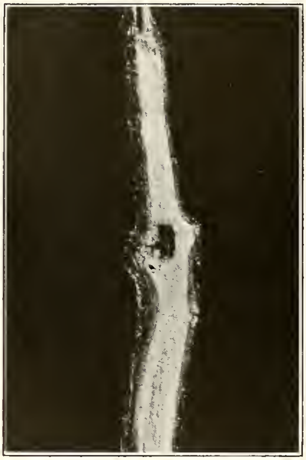

Figure 4. Section through the gall-like callus produced about the girdle, the result of feeding by a tree hopper, to show injury to the plant by insects' feeding punctures. (Enlarged 2½ times.)

Cages 3 by 1½ feet, constructed of fine wire mesh on wooden frames, were placed over young black-locust seedlings planted in August, 1934, for experimental purposes. Nymphs and adults of the tree hopper were placed in some of these cages, while from others all insects were excluded. In the cages containing insects, all the seedlings known to have been attacked died, none of them living long enough to show the girdle-like callus. This, of course, is often true in the nursery, as many plants, especially the younger ones, die immediately as a direct result of the feeding injury. Seedlings in the check cages containing no insects remained healthy. It was thus shown that these insects are responsible for the death of the trees.

By the last of August and the first of September, black-locust seedlings at Woodworth were no longer dying and the insect activity for the year appeared to be over. By this time the stems of the seedlings had become so woody that the tree hopper could not injure them. No nymphs or adults of the insect were observed either within or outside the nursery. The records showed that in 1933 seedlings at the old nursery site stopped dying at about the same time of the year. In the 1934 planting there will undoubtedly be a greater loss than the ten per cent of trees immediately killed, as the trees break off at the point of the girdling when they are pulled for planting. This year the nursery was planted to grow 1,500,000 trees; about 1,000,000 trees will be available for pulling. Not all this loss can be attributed to the tree hopper, since fungi and other agencies were responsible for some of it.

An examination of the experimental plots on September 19, 1934, revealed a few nymphs and one adult membracid feeding on the plants. The insects were also feeding on the petioles of the older plants in the main nursery, causing a similar girdle on this part of the plant. On later planted, younger and more succulent experimental plants the insects were found feeding on the stem in the usual manner.

It appears that by 1933 the tree hopper had built up a large population after migrating from some wild host plant to the black-locust nursery at the old site, which had been used for several years to grow black-locust seedlings. In

(Continued on Page 47)

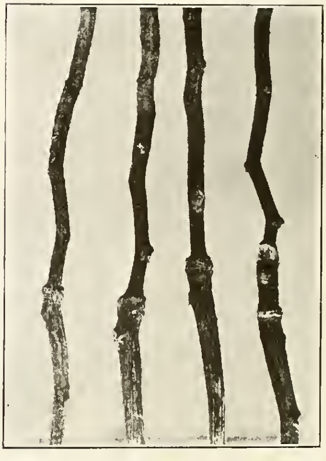

Figure 5. Gall-like swellings on woody stems of young black-locust seedlings, the result of feeding punctures by a tree hopper. (Natural size.)

The Gulls, Terns and Skimmers of Louisiana

PART ONE

By **JAMES NELSON GOWANLOCH**
Chief Biologist
The Department of Conservation of Louisiana

Gulls, Terns and Skimmers compose a fascinating and ever present element in the bird life of our Louisiana coasts, yet few citizens can distinguish a Gull from a Tern, and still fewer can name more than several of our sixteen different species of this group. Although many a layman serenely applies the term "seagull" to any bird he observes at sea, Gulls, Terns and Skimmers are not truly sea birds; that is, they are not truly oceanic creatures, but are characteristically inhabitants of the coasts.

Gulls, Terns and Skimmers exhibit a fascinating range of adaptation in their successful struggle for existence, and since even an elementary knowledge of these attractive species, their cries, their flight, and their habits, adds much to the pleasure of hours spent afield along the Louisiana beaches, the following brief account of these birds has been prepared, to serve as a preliminary introduction to them.

Gulls, Terns and Skimmers are grouped with certain other aquatic birds to form a vast order. The relationships of the various bird groups involved are, for the sake of brevity and clearness, here tabulated so that, at a glance, the reader may orient himself.

The present composition of this extraordinarily interesting group of birds, the ORDER CHARADRIIFORMES, is (American Ornithologists Union, 1931) as follows:

SHORE BIRDS, GULLS, AUKS and ALLIES
ORDER CHARADRIIFORMES

JACANAS and SHORE BIRDS
SUBORDER CHARADRII

Jacanas — Superfamily Jacanoidea
Family Jacanidae
(No Jacanas occur in Louisiana)

Shore Birds — Superfamily Charadrioidea
This superfamily is composed of five families, namely:
  The Oyster-catchers
  The Plovers, Turnstones and Surf-birds
  The Woodcock, Snipe and Sandpipers
  The Avocets and Stilts
  The Phalaropes

SKUAS, GULLS and TERNS — SUBORDER LARI
Jaegers and Skuas — Family Stercorariidae
  (No Jaegers or Skuas have been reported from Louisiana)
Gulls and Terns — Family Laridae
The Gulls — Subfamily Larinae
 The following species occur in Louisiana:
  Herring Gull
  Ring-billed Gull
  Laughing Gull
  Franklin's Gull
  Bonaparte's Gull
The Terns — Subfamily Sterninae
 The following species occur in Louisiana:
  Gull-billed Tern
  Forster's Tern
  Common Tern
  Roseate Tern
  Eastern Sooty Tern
  Least Tern
  Royal Tern
  Cabot's Tern
  Caspian Tern
  Black Tern
  Noddy Tern
The Skimmers — Family Rynchopidae

Our single Louisiana species, the Black Skimmer, is the only North American species.

The groups under discussion have been shifted about in the various systematic changes of the official American Ornithologists Union Check-list. Indeed, the Skuas, Jaegers, Gulls, Terns and Skimmers were once grouped to form a compact, separate Order, the Longipennes (the Long-winged Swimmers). Studies have made apparent their close relationship with the shorebirds and forms with which they are now grouped.

Gulls and Terns, it may be stated by way of introduction, range the world over, being absent from only completely arid areas. Adjusted to a surprising range of temperatures, certain species have penetrated the Arctic and Antarctic regions, while other species best flourish in, or are confined to, the tropics. Still other species have, in their breeding season, deserted the sea and have come to nest habitually far inland where, abandoning their diet of fish, they have become insect eaters. Examples of each of these will be discussed.

Skimmers compose a much more restricted group, highly specialized in their feeding habits and differentiated into only four recognized species throughout the world, one of which, the Black Skimmer, occurs in North America.

Gulls, Terns and Skimmers are, on the whole, highly sociable birds, particularly during the breeding season, when not only do the members of a species congregate to form, often vast, colonies, but several species may mingle in such a bird city. Louisiana, in its famous bird reservations, low islands along its coasts, affords remarkable examples of such a colonial existence. The writer has had the great privilege of studying these islands during several seasons. Biologically, the picture presented by such populous colonies is of extraordinary interest. Problems of food supply, of identification by parents of their own particular egg or eggs, discriminated often among literally acres of, to the human eye, indistinguishably similar eggs, the nurture of their own particular young out of confused thousands, the hazards of a life so subject to the bitter inconstancies of wind and sun and sea—all provide problems of animal behavior never yet adequately investigated. Fragile and careless though they seem, these graceful wanderers enact an existence as full of troubles as ever that of Job.

Gulls, Terns and Skimmers, on the whole, can be distinguished readily as far as the three groups are concerned. Skimmers are instantly recognizable because of their astonishing bills which give to them their common name of Scissor-bill, with its Louisiana-French equivalent, *Bec-en-ciseaux* (Read, 1931). Their flight and cries likewise mark them from both Gulls and Terns. The flight is peculiarly loping. Their commonest notes recall somewhat the baying of a pack of hounds.

Gulls and Terns, on the whole, can be distinguished from each other by general differences in their manner of flying and fishing. Terns typically fly with the head at right angles to the long axis of the body. Watchfully alert, their eyes sweep the water and when they observe available prey, Terns characteristically flash downward with a spectacular plunge, a splash of silver spray and rise with an astonished fish in their beaks. Gulls, in contrast, typically fly with the head extended in the main body axis, and when they have found food they characteristically sweep downwards and with agitated wing movements flutter at the water surface while they seize what they seek.

Terns characteristically choose living fish as food, the great majority of the fish they capture being of no direct value to man. Living shrimp and other aquatic crustacea also contribute to their fare. Gulls eat much dead food, and in this way often serve a valuable office as scavengers in harbors. Gulls and Terns, however, will mingle as retinue of a shrimp trawler to seize and compete for freshly dead, discarded fish. The agitation and clamor of such an excited cloud of birds is extreme, their skill of flight, admirable. The excitement increases when, with the dash of a corsair, the Man-o'-war-birds join the company and compel the reluctant Terns and Gulls to drop their gains. The Man-o'-war-birds, with sweep of unerring wings, swiftly recover the booty before it touches the water.

Gulls, Terns and Skimmers present a wide range of daily habits. Some species feed much at night, as for example, the Black Skimmer and the Noddy and Sooty Terns. Others are highly diurnal. Species also vary widely in size, flight and cries.

Birds of the coast, the following company that trails a departing ocean liner soon melts away as the land drops behind. Anthony (1906) states that Herring Gulls on the Pacific usually turn back some twenty-five miles at sea, but Alexander (1928) notes that Glaucous-winged Gulls have been reported as trailing Pacific liners from North America to Hawaii. The Kittiwake, a northern gull (this species has never yet been reported from Louisiana, although it has been taken as far south as Florida on the Atlantic coast) is probably one of the most oceanic of all the group. Kittiwakes, banded as nestlings in the Farne Islands off the north east coast of England, have been recaptured across the Atlantic, once in Newfoundland and once in Labrador, which, Alexander (1928) believes, suggests that they had accompanied west-bound ships traversing the northern route. The writer recalls the vivid picture formed by thousands. of Kittiwakes as day and night they follow the mid-winter fishing activities of a steam trawler two hundred miles off the Nova Scotian coast. Born amid Arctic ice, they seem thoroughly to enjoy contesting with the storm, and their musical cries become so much a symbol of the storm itself.

Gulls, Terns and Skimmers thus, although they may do much of their marketing at sea, characteristically linger near the coasts to which they must return to rest and to breed.

The economic aspects of Gulls, Terns and Skimmers may be compactly summarized. Careful investigations, based upon the examination by scientists of the contents of many thousands of stomachs of the various species, prove that, on the whole, the food taken by our Louisiana forms is composed to only a negligible degree of useful fish. The majority of our species, at most, only commit the inconsiderable fault of eating certain inedible fish which are usual food for other edible fish species. Those Gulls and Terns that move inland during breeding season (for example Franklin's Gull and the Black Tern) perform an enormous and valuable destruction of insects, including such important pests as mosquitoes, cutworms and grasshoppers.

There stands today in Salt Lake City, a beautiful bronze monument, erected at a cost of $50,000 to commemorate the gratitude of the early Mormon settlers, whose crops, threatened with complete destruction by hordes of grasshoppers, were saved by the arrival of great flocks of Franklin's Gulls. The writer remembers with sharp pleasure the sight of these graceful rosy-breasted Gulls when on the spring prairies of Manitoba they followed the farmer as he turned his brown furrow. Quite fearless, because quite unharmed, they would alight on the backs of the horses, and even momentarily on the very shoulders of the plowman. Far from the sea, these beautiful creatures present a picture of such peculiar grace that they have won for themselves the lovely, if wrong, name of Prairie Doves.

One Tern has the reputation of being the world's widest wanderer. This is the Arctic Tern, a species never yet reported from Louisiana probably because it performs its migrations chiefly far at sea. Known to penetrate the Arctic ice to northern Ellesmere Island (Taverner, 1934), and reported to attain to within eight degrees of the North Pole (Alexander, 1928), the Arctic Tern crosses the world to winter south, where in the Antarctic Ocean it has been found as far down as latitude 74 degrees. It has been surmised of this graceful little traveler that it probably enjoys more hours of sunlight than any other living thing, since as Cooke (1911) has said: "At their most northern nesting site the midnight sun has already appeared before their arrival, and it never sets during their entire stay at the breeding grounds. During two months of their sojourn in the Antarctic they do not see a sunset, and for the rest of the time the sun dips only a little way below the horizon and broad daylight continues all night. The birds, therefore, have 24 hours of daylight for at least eight months of the year, and during the other four months have considerably more daylight than darkness."

Louisiana Gulls

Only one of our five Louisiana Gulls breeds in the State. This is the Laughing Gull, a bird of attractive appearance and excitable behavior. Two other species, Bonaparte's Gull and Franklin's Gull, breed in the interior of the continent and move down to become, the first, a rare winter resident, the second, a fairly common winter resident on the Louisiana Gulf coast. The two remaining species, the American Herring Gull and the Ring-billed Gull are common winter residents not only along our Gulf coast but throughout the larger waterways of southern Louisiana. The Laughing Gull can be distinguished by its call. The loud, clear, *ha-ha-ha-ha-ha* that has given the bird its name has been likened by many observers to maniacal laughter. Bent (1921) gives a witty interpretation for their cry, when he says that while the Pelicans are fishing, the Laughing Gulls shout out *"half-half-half"*, demanding their share in the feast. "As soon as a Pelican appears above the surface with a pouch full of small fry one or another of the Gulls attempts and often succeeds in alighting on the Pelican's head and helping itself to the bountiful supply in the capacious pouch."

Our two other winter Gulls are much larger than the Laughing Gull, one, the American Herring Gull, being largest of all Louisiana Gulls. Both the Herring and Ring-billed Gulls appear quite commonly along the Mississippi River at New Orleans, as well as on the coasts. The two smaller winter Gulls, Franklin's and Bonaparte's Gulls, are both, like the Laughing Gull, black-headed species and in winter season can be distinguished from the Laughing Gull and from each other only by careful observation. Both birds breed inland.

Louisiana Terns

The Terns of Louisiana present a greatly more complex problem. Terns are typically sharp-billed birds (whereas the upper bill of the Gull is usually hooked). Terns are usually white in plumage with, typically, a black cap and a gray mantle. The tail is often forked and often long, contrasting with the characteristically short, square tail of Gulls.

Three of our Louisiana Terns, one common and two rare, sharply depart from the usual Tern plumage pattern. These are the black and white Eastern Sooty Tern, and the almost completely dusky Black Tern and Noddy Tern.

Terns and Gulls both exhibit marked seasonal plumage changes, making still more difficult the problem of their identification by the beginning bird student. It is only by careful study, aided with the use of good prism binoculars, that some of the species can be distinguished. Even then, two of them, the Common and Forster's Terns, will remain doubtful in the field.

Louisiana is more fortunate in its Terns than in its Gulls, since, of the eleven species occuring in the State, six are definitely known to breed here. These are the Forster's, Eastern Sooty, Least, Royal, Cabot's and Caspian Terns. Birds of remarkable grace and charm, they have well earned their popular name of sea swallows (*les hirondelles de mer*).

The Terns once suffered horribly, from persecution by plume hunters. Indeed the Least Tern, over portions of its range, was virtually exterminated. The cruelties perpetrated by these plumage hunters matched those of the Egret trade. If one be permitted the indulgence of a pun, it might be said that these hunters left no stone unturned to leave no Tern unstoned. Landing on the island colonies of the Terns they would ruthlessly shoot down the nesting adults. The cries and frantic movements of the wounded birds, instead of warning the others of danger, served to lure them within gun range, so that in a single afternoon a once highly prosperous bird city would become a desolation of abandoned eggs and starving young, the parents all destroyed. Chapman relates an instance on Cobbs Island, Virginia, when 1,400 Least Terns were killed in one day. Indeed, at the time this slaughter was first begun for millinery purposes, one man killed 2,800 birds in three days on and near this island, receiving for them ten cents each. The lucrative rewards possible from this heartless practice made extremely difficult the passage of protective laws, but the continuous and unrelenting efforts of nature lovers and conservation agencies at last won the day and saved from extinction these graceful birds. The record of this fight is a stirring one, a tale shedding great honor upon those whose earnest and unremitting devotion won victory.

A brief account of each of the different species of Gulls, Terns and Skimmers so far recorded from the State of Louisiana will be given in this and a following paper. A key designed to aid in the identification of our Louisiana Gulls, Terns and Skimmers will be provided at the conclusion of Part II of this account.

THE AMERICAN HERRING GULL, *Lárus argentátus smithsoniánus* COUES

Originally described from the eastern and western coasts of North America in 1862, the American Herring Gull is the largest of our Louisiana Gulls. The writer has heard it referred to in Louisiana by no special name other than the Louisiana-French, *goilan*. Elsewhere it has received the additional names of Winter Gull, Harbor Gull, and in the North, Common Gull and Lake Gull. The simple and general designation, Seagull, is everywhere usual.

With a length of 22 to 26 inches, and a wing spread of 54 to 58 inches, the Herring Gull shows in summer a white body and tail and a pale gray mantle. The primaries, gray at the base, become dark slate or blackish with white tips, the outermost with additional larger subterminal white spots. The yellow bill has a conspicuous red spot near the tip. The flesh colored legs and feet afford the best field mark (other than size), since none other of our Gulls shares this characteristic. The head and neck become streaked with brownish grey in winter. In immature birds the grayish brown head is streaked with grayish white and pale buff. The mantle is darker (drab or hair brown) and mottled with creamy white. Below, the bird is hair brown or mouse gray, and may be mottled. The grayish brown primaries lack the white spots of the adult, and the brownish black tail is more or less spotted with white, chiefly toward the base. The flesh colored bill is blackish toward the tip. The feet are fleshy brown.

The Herring Gull breeds from Alaska to southern Baffin Island, and through the Canadian Provinces to central Wisconsin and northern Maine. It winters from southern Alaska to western Mexico, and from the Great Lakes and the Gulf of St. Lawrence as far south as the Gulf Coast, Cuba and Yucatan. In Louisiana it is a winter resident and may casually linger through the summer. It is most numerous along the Gulf Coast region, although individuals occur along the larger rivers.

Nesting in the North, the Herring Gulf usually chooses rocky situations for its home, a lake or river island, or the coasts of some other body of water. Its colonies previously much despoiled by fishermen for the sake of eggs, the Herring Gull suffered extreme persecution. One colony observed by the writer on Pelican Island in northern Lake Winnipeg (O'Donoghue and Gowanloch, 1919) was regarded by local inhabitants as a logical source of food until this practice was prohibited. The writer has known fishermen to land on the island, deliberately trample the eggs of an extensive area and, returning several days later, gather the fresh supply for human food. Herring Gulls, on the coast of Labrador, are captured and confined in pens by cod fishermen, are carefully fattened and later eaten, all in much the manner that domestic fowl are used. Fortunately this practice, also, is being systematically abolished.

Highly sociable, the Herring Gull seems never to seek solitude, for it nests, feeds, sleeps and breeds in companies. The often bulky nest of twigs, weeds, grass and other rubbish may be lined with moss. Observers have noted that where the colony is frequently disturbed, the birds abandon their usual habit of nesting on the ground and resort to trees. Audubon, in 1833 (Audubon, 1840), observed this habit on Grand Manan, a fog-bound and picturesque island in the Bay of Fundy, where the Herring Gulls, within the recollection of residents, had acquired the habit of nesting in fir trees. This observation has an interesting sequel, since Bryant, visiting the same island 23 years later, found the Gulls changing back to their old ground nesting again, presumably because persecution had stopped.

Herring Gull eggs vary widely in number, color, shape and size. One to four have been noted, but three is the usual clutch. The average size of Bent's (1921) series of forty-five eggs was 2.9 by 2.2 inches. Incubation varies according to weather, ranging from 24 to 28 days, with an average of 26 days. Dutcher and Bailey (1903) observed that the behavior of the perents changes as incubation proceeds, so that by the degree of their expression of anxiety it could be roughly estimated how near to hatching the eggs had progressed. The same writers found that the young developed the instinct to hide within as brief a period as an hour or two after birth.

The food is brought by both parents to the young, and may be either taken by them directly from the adult's bill or from the ground. As in the case of other Gulls, food is regurgitated by the parent birds.

Many ornithologists have noted the surprising fact that adult Herring Gulls sometimes become quite murderously inclined, and will kill not only the young birds in the colony, but even those nearly grown. Other observers have noted the development under certain conditions of the practice of diving for food by the adult birds, a procedure unusual in Gulls. A further odd habit is that Herring Gulls often drag dry, stranded fish down to the water's edge. Bent (1921) noted one instance where an 18-inch fish was dragged 134 yards by a Gull that walked backwards during this performance. Apparently the purpose of this act is to soften the food and make it possible for the Gull to perforate the dried skin. Where stranding of fish is frequent, Gulls perform a real service for man when, from far and near, they gather to feast and by their scavenging make many a beach the pleasanter. Herring Gulls, like their relatives, eject from their mouths indigestible portions of fish and crustacea in the form of loosely compacted pellets, which may accumulate around their roosting place and may measure as much as two inches in length.

Herring Gulls present a wide range of behavior in flight, flying in long lines Indian file, in long lines abreast, or in loose companies with slow wing beats. Like other Gulls, they seem to enjoy exercise, often rising in flocks and slowly soaring in circles at a considerable height. The flight of the Herring Gull has long been the subject of admiration by man, and it is of interest to note that several years ago a citizen of Maine who had given much thought to the problem of bird flight constructed an airplane which he named the "Seagull", and which he believed would imitate the flapping and soaring flight of this species. Convinced of its certain success, he took off in the extraordinary contrivance and crashed to his death.

The Herring Gull is capable of considerable longevity, barring accidents. Bent (1921) cites one interesting example: "American ornithologists are familiar with the case of 'Gull Dick', often reported by Mackay in 'The Auk'. For 24 years this bird—easily recognized by markings, voice, and disposition—visited the neighborhood of the Brenton's Reef Lightship in Narrangansett Bay. Here it stayed from about October 12 to April 7. The bird was fed regularly with boiled pork and fish. It would fly close to the vessel and would respond to calls or waving of the hand at mealtimes, and it jealously drove off all other Gulls. Morris (1903) records another individual that was observed for at least 30 years."

The writer has many times watched Herring Gulls passing to and from their "night anchorage" in New Brunswick and Maine during the late summer when nesting activities are past. Bent (1921) describes an amusing instance of one manner in which this species spends the night: "As the Gulls do not spend the night in the small freshwater ponds on the coast, and as they fly toward the sea at sunset, it is evident that they must spend the night on or near salt water. One such night chamber—it cannot be called a roost—I have found off the beach at Revere, close to Boston. Here in November and December I have seen great companies of these splendid white birds gathering about sunset from a quarter to a third of a mile offshore. Sometimes there are two groups of many hundreds each. Once I saw one that looked like a coral atoll, for it was annular with a calm, open area in the middle. I have seen these birds in a strong offshore wind keep in exactly the same place; so it was evident that each bird, headed up into the wind, must have been paddling hard. This, to our way of thinking, would seem to be a poor manner in which to spend the night—sleep walking with a vengence."

The writer has many times observed a peculiar habit of Herring Gulls during the summer in northern Maine and New Brunswick. The birds were engaged in feeding on various forms of marine life including sea urchins (*Strongylocentrotus* sp.) and large whelks, *Busycon* sp. (a type of sea snail) which had been exposed by the falling Bay of Fundy tide. Unable easily to break into the shells of the whelks, the Gulls would quite deliberately pick them up, jump into the air and ascending a few feet would drop them on the bare rocks, thus shattering the shells. The individual, active in this transaction, would instantly follow its prey down to recover it before any of its neighbors helped themselves. The sea urchins were treated in the same manner.

The food habits of the Herring Gull indicate, as would be expected from its role as scavenger, that it eats almost any form of animal food. Howell (1932), reporting on 61 stomachs examined by the Biological Survey, found that over half of the food was fish, most of it carrion. Perch, catfish and carp were recognized. Other animal items including "mud puppies (*Necturus*), mice, mollusks, crustaceans, squids, marine worms, starfish, beetles and other insects, and a Horned Lark. The vegetable matter consisted almost entirely of marine algae." This species occasionally causes annoyance by picking up fish spread on fields for fertilizer, for which error of judgment the Gulls can scarcely be blamed. Herring Gulls have been sometimes found to pick up and eat ducks that have been shot. One individual (Mackay, 1892) was observed to carry a dead Red-breasted Merganser nearly a quarter of a mile by stages of about 25 yard flights.

The writer had a peculiar experience with the Herring Gull on one occasion in the Bay of Fundy, off the coast of Maine, illustrative of the shrewdness of this bird. A research boat and staff were engaged in carrying out measurements and scale sampling of Herring, each Herring being discarded overboard when the observations were completed. This attracted the usual retinue of Gulls. The captain wagered the writer that the latter could not catch one of these Gulls by casting over a baited line. To the writer's great surprise, the cloud of excited Gulls, swooping down to seize the discarded Herring, would completely ignore the single herring to which the fish line was attached. At last the expedient of withholding the supply was tried and when, finally, a considerable mass of fish, in which there was but one Herring with a line attached, was cast overboard, together with sufficient "paid out" line so that the bait fish would not be drawn along with the boat, the frantic cloud of screaming Gulls plunged downward to divide the booty and this time, deceived, one Gull promptly swallowed the baited fish and was promptly captured, quite unharmed. Since the practice of catching Gulls in this fashion is not at all usual in the Bay of Fundy, it was surprising to observe the accuracy with which the Gulls could distinguish among various Herring the one fish that meant danger for them.

The usual alarm call of the Herring Gull is represented by Bent (1921) as *kak-kak-kak,* or *ha-ha-ha,* while Strong (1914) used the syllables *kek-kek-kek* with the accent on the first syllable. A completely different note, associated with courtship, is described by Bent: "In the spring one may often see on a sand bar some of the Herring Gulls walking proudly about raising and lowering their heads and emitting from time to time loud sonorous notes, a bugle call which I believe to be their love song, while others stand quietly by. As this song is given the head, with wide-open bill, is raised until it points vertically upwards and then lowered to the horizontal position. As the sex cannot be distinguished one may only guess that it is the males that are thus parading themselves."

RING-BILLED GULL, *Lárus delawarénsis* ORD

The Ring-billed Gull, originally described from the Delaware River below Philadelphia in 1815, is, like the Herring Gull, a winter resident in Louisiana. An abundant winter resident along the coast, it ranges also throughout the State, and although it does not breed here, it does occur as a summer casual. Popularly confused with the Herring Gull, it has received no distinctive local names. The Ring-bill's length of 18 to 20 inches and wing spread of about 48 inches place it between the Herring and Laughing Gulls. The summer plumage shows a pale pearl gray mantle. The six outer tips of the primaries are chiefly black with either white tips or white sub-terminal spots. The bill is greenish yellow, with a distinctive blackish ring or band near the tip in adult birds. The legs and feet are yellowish green, contrasting with the flesh color of those of the Herring Gull. Winter birds show dusky streaking on the head and neck, while immature birds of the first year are mottled with dusky brown and pearl blue above, show quite dark wing coverts with lighter margins, completely black primaries, chiefly black secondaries, and a tail with a broad black band followed by a white tip. The ringed bill and the color of the feet distinguish adult birds from the Herring Gull, but immature birds, except for the size differences, are hard to distinguish. Breeding in the interior lakes from southern Alaska, northern Manitoba and southern Ontario south to southern California, Idaho, North Dakota, northern New York and the shores of the Gulf of St. Lawrence, this species winters from British Columbia, California, Montana, the Great Lakes and Maine south to the Gulf Coast, Cuba and southern Mexico. Its breeding range formerly extended south of the present limits. An abundant winter resident over much of Louisiana, its numbers are greater in the southern part of the State and it also occurs as a summer casual, although not breeding.

The Ring-billed Gull has shown the effects of man's influence more than has the Herring Gull, and has been driven away from many areas where formerly it nested. Colonial, like the Herring Gull, its habits resemble those of that species. Choosing rocky islands or reefs, or the low islands of the northern inland lakes, the nest is placed on the ground along the upper edges of the beaches or irregularly scattered over the islands. Grasses, weeds, small sticks, with a lining of finer grasses and often a decoration of feathers form the construction. The eggs vary from two to four, with three as the usual number, and like those of other gulls present a wide range of shape, size and color. The incubation period, twenty-one days, is shorter than that of the Herring Gull. The young, after remaining in the nest for a few days, learn to hide among vegetation or rocks and early learn to swim. In its breeding range, this gull sometimes becomes highly beneficial, following the plow and picking up adult and larval insects, mice and other rodents. At times the diet becomes exclusively grasshoppers (this is on its northern breeding range) and the Gulls in times of plenty often completely stuff themselves. The flight of the Ring-bill and its ease and grace in swimming resemble the similar attributes of the Herring Gull. The notes are described by Bent (1921) as "a shrill, piercing note of protest — *kree, kreeee*—like the cry of a Hawk, but when its excitement has somewhat subsided this note is softened and modified and the subdued *kow, kow, kow* notes are often heard from a flock of Gulls floating overhead. It is often noisy while feeding, while a cloud of hovering Gulls show their excitement by a chorus of loud, squealing notes and shrill screams. While pursuing its ordinary vocations it is usually silent, except for an occasional soft, mellow *kowk*."

The food of this species as reported by Howell (1932) based on the Biological Survey examination of 41 stomachs is "about one-half fish, one-fifth insects, one-eighth refuse, and the remainder smaller proportions of mollusks, crustaceans, frogs, and mammals. Perch and carp were the fishes most often taken, and among the insects were weevils and other beetles, grasshoppers, crickets, locusts, cockroaches and bugs."

NOTE: Limitations of space make it necessary to divide the discussion of the Gulls at this point. The account of the Laughing, Franklin's and Bonaparte's Gulls, together with that of the Terns and the Black Skimmer, will appear later. The list of references cited will also be given at the end of the entire discussion.

(*To be Continued.*)

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Some Wild Flowers of Louisiana

Part II

Woodland Flora of the Pine Flats

By

C. A. BROWN

Assistant Professor of Botany, Louisiana State University

THE woods of the pine flat sections of Louisiana have a flora which is strikingly different from that of the alluvial sections and to some extent unlike that of the adjoining pine hills. These woods cover thousands of acres of land in St. Tammany and Tangipahoa parishes, and west of the Mississippi River, in the parishes of Jeff Davis, Calcasieu, Beauregard, and Allen.

In the pine flats, the ground is level to slightly rolling and is intermittently wet and dry. The soil varies from a sandy loam to a heavy clay and is quite acid. In some areas the soil is almost a pure sand. Scattered throughout these areas are wet meadows and numerous small ponds which are filled with water at least a portion of the year; long meandering branch bottoms, and pine ridges only slightly higher than the surrounding terrain.

The flat woods were once covered either with stately stands of Long Leaf Pine (*Pinus palustris*) and Slash Pine (*Pinus caribaea*) or, in the moister branch bottoms, with such hardwoods as Water Oak (*Quercus nigra*), Live Oak (*Quercus virginiana*), Swamp Black Gum (*Nyssa biflora*) and Sweet Bay (*Magnolia virginiana*). Many of these trees contain clusters of Mistletoe on their branches as well as festoons of Spanish Moss. At the present time most of these pine forests are gone. In their place one can see thousands of acres of burned and decaying stumps, with here and there a few suppressed or deformed trees, remnants of a once magnificent forest. The ground is carpeted with a dense stand of grass which furnishes forage for many head of cattle and sheep. Annual fires are common in this area, unfortunately. Many of these are set purposely because of the belief that fire will improve the grazing. As a matter of fact the fires are actually preventing the growth of young trees, actually destroying desirable forage plants, and are allowing the invasion of undesirable weeds.

Motorists usually pass through these uninviting areas as quickly as possible. However, to the nature lover, these are not barren fields, for they contain a multitude of interesting, rare, beautiful, and unusual plants. As the limited space does not permit a detailed discussion and illustration of all the numerous flowers which grow in these flat woods, only a few of the more interesting plants will be mentioned.

In January these fields are usually a dull brown because of the abundance of dead grasses which have been killed by the winter frosts. Early in the month, if the season is favorable, a few flowers of the Sunbonnet (*Chaptalia tomentosa*) appear. By the middle of February and in early March, these welcome blooms appear like white stars on a brown background.

March and April are the awakening months for a host of interesting plants. The deep red blossoms of the Parrot's Pitcher (*Sarracenia psittacina*), or the bright yellow of the Trumpet Pitcher (*Sarracenia Sledgei*) are sure to attract attention. These plants are called "pitcher" plants because the tubelike, hollow leaves usually contain water. Most of the text books list the pitcher plants as examples of insectivorous plants, plants which trap insects for food. The water at the bottom of these modified leaves usually contains the remains of insects which have drowned in the pitcher. This pitcher is lined with stiff hairs which point downward and are so placed that they allow an insect to crawl down into the leaf, but prevent it from crawling out, so the unlucky insect finally becomes exhausted and drops to a watery grave. There is some disagreement regarding these plants. Some authorities do not believe that enzymes capable of digesting the insects are secreted and consequently they do not believe that the plants are insectivorous. On the other hand, some botanists do report the presence of enzymes and believe that the plants use the insects for food. All are agreed that the insects are trapped in the leaf.

Associated with the pitcher plants one can find the Sundews (*Drosera brevifolia* and *D. rotundifolia*) usually hidden by the tall, rank growth of grasses. These plants are truly insectivorous. The leaves are beset with tiny gland-tipped ten-

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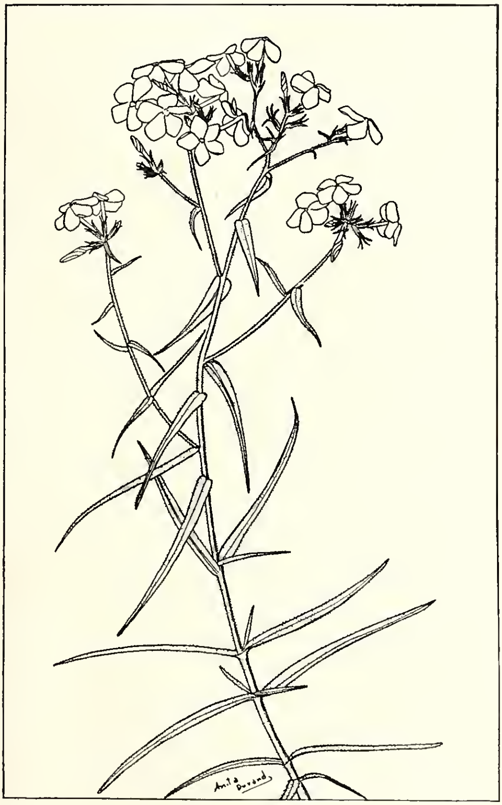
NOTE—*"Wild Flowers of Louisiana" by Caroline Dormon, Doubleday, Doran and Co. Inc., Garden City, New York, 1934, is a recent volume of 172 pages devoted to the flowers of the State. It is illustrated with 34 colored plates and 38 additional line drawings, all the work of Miss Dormon.*

drils, each of which secretes a drop of sticky liquid. When an insect ventures to cross these leaves, it becomes entangled in the sticky fluid. The tendril then curls over the insect and finally the blade of the leaf rolls up and remains in that way until the insect is completely digested.



DOWNY OR PRAIRIE PHLOX

Phlox pilosa L.

Phlox Family **Polemoniaceae**

The love of beautiful flowers has led man to domesticate many kinds of plants, among them the phlox, and he has been well repaid for the attention given them. In the hands of a skillful plant breeder, phloxes are among the most plastic of plants. Cultivated phlox now comes in dwarf forms six to eight inches tall, which are used for the margin of flower beds; intermediates from twelve to eighteen inches tall; and giants two to three feet tall. Aside from stature they are bred for size of flowers, size and shape of leaves, shape of the inflorescence, fringed margin to the petals, and a rainbow of colors. They can be obtained as annuals, biennials, or perennials.

The wild phloxes are likewise variable since Mother Nature is the greatest of plant breeders. At least five species have been recorded for Louisiana, and exploration of our phlox flora will yield some undescribed species.

The Prairie Phlox is a perennial with ascending to erect stems from one to two feet tall. The leaves are linear to lanceolate, opposite near the base of the stem, and alternate near the inflorescence. The leaves, stem, and calyx lobes are coated with soft, usually glandular hairs. The corolla is about an inch in diameter, and is variable in color, pink, lavender, whitish, bluish, and many intermediate shades.

It blooms in April and May.

It is common and widely distributed in Louisiana on the acid soil of the wet pine flat woods, and is also at home on the drier soils of the pine hills.

Illustration one-half natural size.

The Bladderwort (*Utricularia fibrosa*) is another interesting insectivorous plant. The tiny, irregular flowers are on a slender stem two to twelve inches tall. When these plants grow in water or in very wet mud, submerged stems with whorls of finely cut leaves are produced. The tiny little bladders on the leaves are in reality traps for the unwary infusoria and small aquatic insects. The bladders are so constructed that they will open when some tiny insect touches the "trigger". The insect is carried along on the water which rushes into the bladder and the trap door closes. The water is "pumped out" and the insect is then digested.

Orchids are scattered throughout the fields, never very abundant, but usually frequent enough so that they cannot be called rare. There are several species of the Lady's Tress orchids. Some of these bloom in the spring, others in mid-summer, and at least two species in the late fall. These Lady's Tress orchids can be recognized by the numerous white flowers spirally set on an erect, usually leafless stem. The Swamp Pink or Grass Pink (*Limodorum tuberosum L.*) is another common orchid which is associated with the Spiral Lady's Tress. Its flowers are larger, more irregular, and are of a delicate purplish pink. The stiff, narrow leaves and leafless flowering stalk arise from an underground bulb. In July the Yellow-fringed Orchid (*Blephariglottis cristata*) flaunts its spike of showy orange flowers. The enlarged lower lip of this species is lacerately cut to form a copius fringed margin. Late in September and October, a close relative of the orchids (*Burmannia capitata*) can be found hidden among the tall grasses. The Burmannia is a slender, erect herb 2-6 inches tall, practically leafless, with three distinct wings on the light colored perianth tube. High up on the trees, in the swampy woods that border on the flats, is an epiphytic orchid (*Epidendrum conopseum*) which usually blooms unseen.

The legumes, members of the pea family, begin to blossom in March and April, and present a succession of flowers until frost occurs in November. Baptisia, Crotalaria, Cracca, Bradburya, Cassia, Psoralea, and Chamaecrista, along with many others, present a colorful display of yellows, white, pinks, and blues. Many of the Baptisias are erect herbs with a crown of pale green leaves above which the spikes of pale yellow or white flowers are produced. *Baptisia laevicaulis*, one of the pale yellow flowered species, can be readily distinguished from the others. The flowering stalk droops and is partially shaded by the umbrella-like cluster of leaves above it. This growth habit is so distinct that the plant can be distinguished from a rapidly moving car. *Baptisia leucantha* is an erect, white flowered species, the blossoms of which turn black with age.

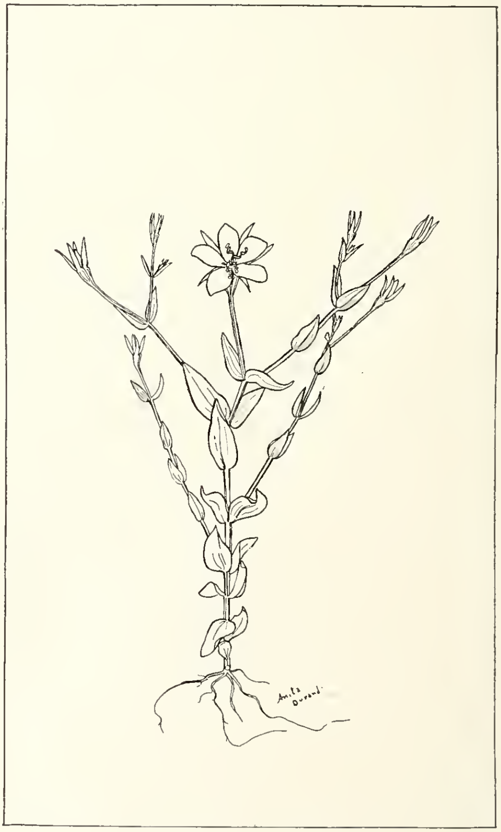
The Butterfly Pea (*Bradburya virginica*) is a good example of a plant which grows on several different habitats. It is common in the wet pine meadows, frequent on the bluff soils along the Mississippi River, and very abundant in the acid sandy soils of the pine hills of northern Louisiana.

Many species of Bush Clovers (*Lespedeza*) and Beggar Weeds (*Desmodium*) come into blossom from August until late fall. Every one is familiar with the seeds of the Beggar Lice (*Desmodium*) that cling to the clothing when one walks through the fields in late fall. Species of these genera are difficult to identify and for the most part, are neglected in the collecting of plants. The Yellow Patridge Peas deserve mention, because they are so common all over the State as well as in the pine flat woods. *Chamaecrista robusta, C. mississippiensis,* and *C. aspera* are perhaps the most common. Quail like the seeds of these weeds.

The Milkwort family (*Polygalaceae*) is well represented in our flora with at least eight species. These are herbaceous plants with usually entire leaves, which may be either alternate, opposite, or whorled, and sometimes with all three types on the same plant. The flower clusters are more conspicuous than the individual flowers, which are so small that a magnifying glass is needed to study their parts. The tiny flowers are irregular, with 3-5 small, partially united petals. The calyx is usually of five sepals, two of which appear like petals. The color varies, yellow, orange, greenish, white, and rose purple. The pretty little Dwarf Milkwort, (*Polygala nana*), commonly called Candy Weed or Bog Bachelor's Buttons, is one of the most attractive. Its clusters of yellow flowers stay in bloom from three to eight weeks, chiefly in April and May, although occasional plants may be found in other months.

The Procession Flower (*Polygala incarnata L.*) is a delicate plant eight to twenty inches tall, with a glaucous green stem, and spike-like clusters of purplish flowers, all so daintily, irregularly cut, that they have been mistaken for wild orchids, until their structure is examined. The flowers of *Polygala viridescens* vary from a reddish purple to white, and if pressed between sheets of paper, will leave a halo of iridescent purplish stain around the place where the flowers were crushed in pressing.

The Gall Berry (*Ilex glabra*), a close relative of the Holly (*Ilex opaca*) and Yaupon (*Ilex vomitoria*), is very common and often forms thickets of considerable extent. It has a horizontal underground rootstalk which aids in the formation of the dense thickets. The tiny, whitish flowers are inconspicuous, and the fruit is a black, spherical berry about one-fourth of an inch in diameter. The Gall Berry is an important source of nectar for honey in some sections of the United States.



BITTER BLOOM OR ROSE PINK
Sabbatia angularis (L.) Pursb.
Gentian Family **Gentianaceae**

The term pink does not begin to convey the delightful coloring of these flowers. Of a beautiful, deep pink which does not fade rapidly and with petals which do not fall readily, they last for several days as cut flowers.

The plant is an annual herb with a sharply four-angled stem which is bushy-branched above. The leaves are opposite, ovate, and strongly clasping. The flowers at the ends of the branches are one to one and a half inches in diameter, with five pink petals.

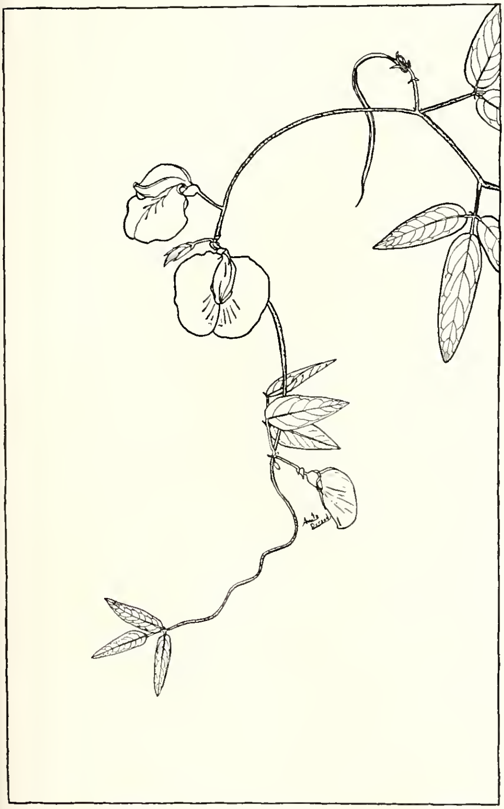
It blooms from May through June.

Abundant in the pine flat woods and widely distributed in the pine hills where it grows to a larger size. Illustration one-half natural size.

There are four species of Deer Weeds or Meadow Beauties (*Rhexia* spp.) which unfold their bright blossoms in midsummer. The flowers of these plants are so fragile that just the slightest jar will cause their petals to fall.

People sometimes wonder why so many American plants have been described in Europe. This is largely due to the fact that in the early days, most of the important botanical gardens, laboratories, and herbaria which at the time were recognized as centers from which botanical information could be obtained were located in Europe. At these institutions were the well known botanists of that period. It is only natural that travelers in all sections of the world would send their plant collections to these European experts.

Some common Louisiana plants were named from specimens sent to Europe by the early travelers. Mr. Thomas Drummond, an early collector who visited Louisiana, collected plants in the vicinity of Covington. He sent his specimens to Dr. Hooker of the Kew Botanical Gardens in Eng-



BUTTERFLY PEA

Bradburya virginiana (L.) Kuntze.

Legume Family **Leguminosae**

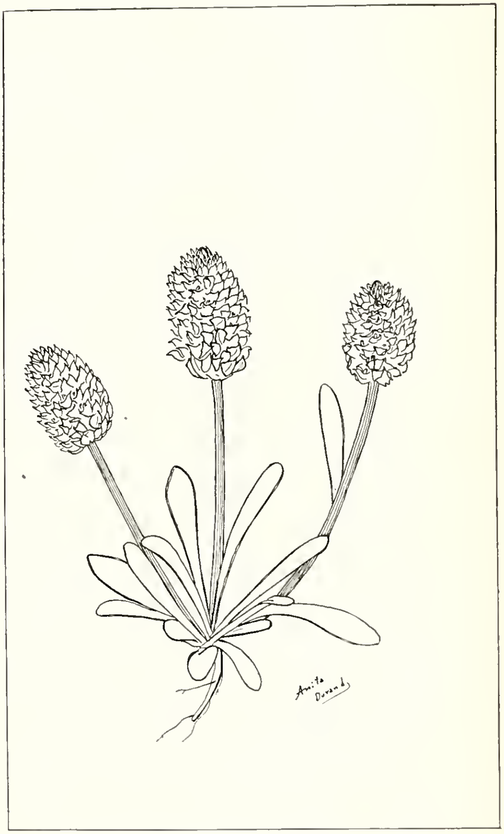
In midsummer the splashes of pale violet scattered through the roadside thickets are the flowers of the Butterfly Pea. These flowers are connected to a twining and climbing vine, delicate and inconspicuous in the dense thickets, where the plant would be passed by except for the flowers. Here is a plant worthy of cultivation on a trellis of its own.

This delicate vine often climbs to a height of ten feet. The showy pale violet or bluish flowers vary from an inch to an inch and a half in diameter. The fruit is a pod which at maturity is slender, stiff and rapier-like in shape.

It blooms from early summer until early fall (June-October).

Widely distributed in Louisiana on acid soils of the bluff lands, pine hills, and pine flats.

Explanation of Plate: Figure one-half natural size. Immature fruit illustrated.



DWARF MILKWORT—BOG BATCHELOR'S BUTTON

Polygala nana (Micbx) D. C.

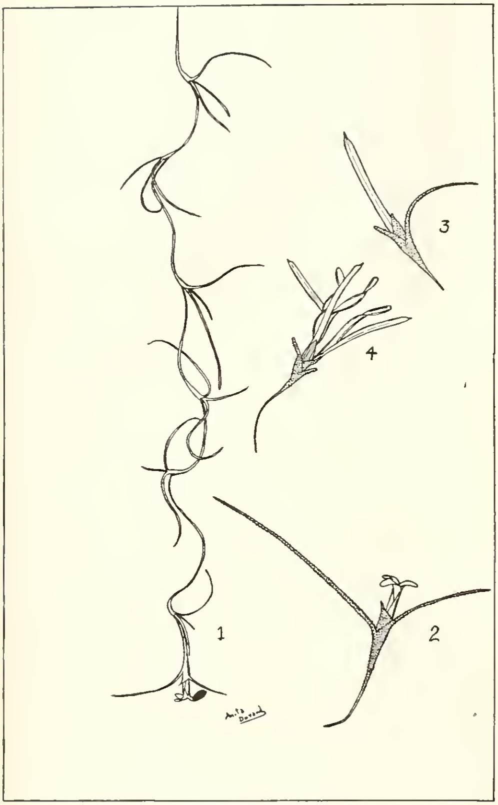
Milkwort Family **Polygalaceaa**

This plant blooms for a period of three to eight weeks and is worthy of cultivation because of this fact alone. Its dwarf stature makes it useful for border planting for flower beds and in the crannies of rock gardens. It grows not only in wet, acid soils but also in dry, sandy soils.

It is an annual plant with tufted stems three to eight inches tall, which arise from fibrous roots. The stems may lie procumbent on the ground or become erect at times. The spatulate leaves are mainly basal. The tiny flowers are arranged in a compact, cylindrical cluster at the end of the flower stalk. The petaloid sepals rather than the petals give the flowers their conspicuous color.

It blooms chiefly in April and May although it is not uncommon to find occasional blossoms in every month of the year. It is common on the acid pine hills with **Phlox pilosa.**

Illustration **natural size.**



SPANISH MOSS, MOSS

Dendropogon usneoides (L.) Raf.

Pineapple Family **Bromeliaceae**

Spanish Moss is a distinctly southern plant. Its long pendant festoons, silver-gray in the sparkling sunlight, add a picturesqueness to the southern scenery which cannot be duplicated elsewhere. On the other hand, in winter the wind-draped sober hued plants, clinging to the dark, leafless trees against a leaden sky present a dismal aspect.

Spanish Moss is handicapped by its name, for it is not a moss, but a flowering plant; a close relative of the pineapple. It is a common belief in Louisiana that Spanish Moss is a parasite which eventually will kill trees but this is not so. It is an epiphyte, or air plant. Epiphytes are plants which are able to manufacture their own food, although they have no connection with the ground or with the support on which they exist. Spanish Moss will even live for some time on telephone wires. It may be harmful to trees when the increased weight of the rain-soaked moss, buffeted by strong winds, causes branches to break. The moss does not smother the trees as is commonly believed.

Spanish Moss is a product of the forest which brings an annual income to many. The moss industry in the United States returns an annual income of about a third of a million dollars yet no one knows how fast the moss grows. The outer coating of the Spanish Moss stem which is composed of gray scales rots away, leaving the long, resilient black "fibers," which are used in upholstered furniture and in mattresses of moderate quality.

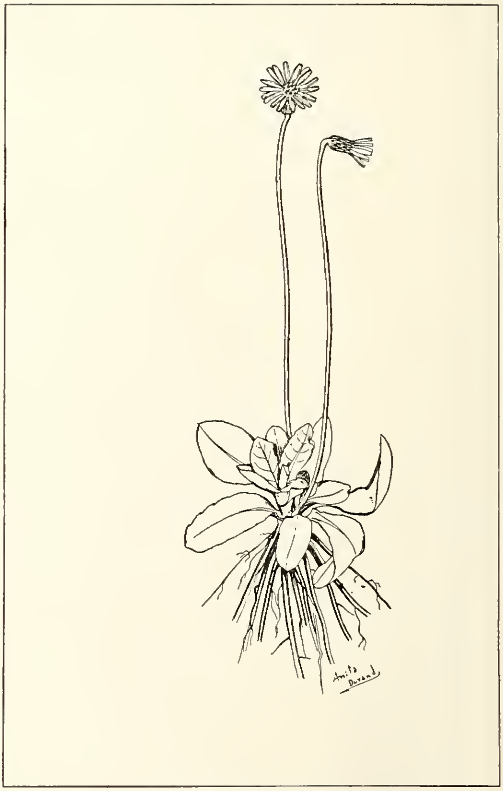
It is an epiphytic, much branched, pendular herb, with thread-like stems and leaves coated with scurvy, gray scales. Flowers are solitary in the axils of the leaves. The pale green petals are slightly reflexed. The fruit is a narrow capsule about two inches in length. The seed is about three millimeters long and has a plume-like parachute which is an aid for wind dispersal.

It blooms in April and May. The flowers are inconspicuous and seldom observed. The fruits liberate their seeds late in the spring of the next year.

Widely distributed over lower Louisiana, on all kinds of trees. Inland it is confined to the vicinity of streams and swamps.

Illustration: 1. One-half natural size.
2. Flower, natural size.
3. Unopened seed pod, natural size.
4. Opened seed pod, natural size.

land for identification. Some of these proved to be plants which had not been previously described. To one of those Dr. Hooker gave the name *Sabbatia macrophylla.* This plant is closely related to the Rose Pink, *S. angularis,* which is illustrated in this article, the chief difference being that the former has a round stem and larger leaves. *S. angularis* produces a square stem which becomes bushy-branched at the top, and each branch bears from one to several pink flowers, three-fourths to one and one-half inches in diameter. This species is widely distributed in Louisiana on the acid



SUNBONNETS

Chaptalia tomentosa Vent.

Thyrasanthema semiflosculare (Walt) Kuntze

Composite Family **Compositae**

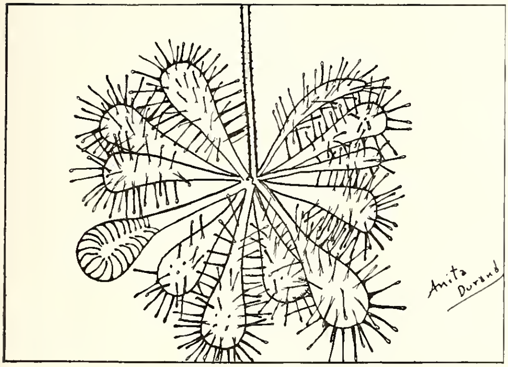
The charming plant which has been given the name of Sunbonnets has a curious habit of closing the flower cluster and nodding its head during the night. Late in the morning after the sun comes up, the cluster becomes erect and the flowers open to face the sun.

It can be readily recognized by the rosette of green leaves which are covered underneath with a dense whitish mass of tangled hairs. The flower cluster is borne on a naked scape. The ray flowers are whitish within, and often stained purplish on the outside. The disk flowers are inconspicuous, and whitish to cream colored.

The blossoms can be found from the middle of February until April and occasionally later.

It is one of the earliest plants to bloom in the low wet pine flats of lower Louisiana.

Explanation of Plate: Figure—one-half natural size.



LEAVES OF THE SUNDEW PLANT
(Drosera sp.)

soils of the sandy pine hills as well as in the pine flat woods.

Late summer and early fall bring a change in the flora. Different species of the Compositae with conspicuous clusters of colored flowers become pronounced. Wild asters and goldenrods are abundant but the different species are not easily recognized because of the difficulties of identification. Yellow is one of the prevailing fall colors because of the dominance of Goldenrods, Golden aster (*Chrysopsis aspera*), Rayless Goldenrod (*Chondrophora nudata*), Narrow-leaved Sunflower (*Helianthus angustifolia*), and Sneezeweed (*Helenium polyphyllum*) to say nothing of the ever present Bitter Weed (*Helenium tenuifolium*) which lines the roadsides.

The Blazing Stars (*Liatris*) contribute a purple which quickly attracts attention. There are several species, distinguishable from one another only when the characteristics are studied with a magnifying glass. These plants are usually three to four feet tall, not branched, and clothed with numerous clusters of purplish flowers. They are perennial from underground tubers, adaptable to cultivation, and several seed catalogues list them as something different from the usual run of cultivated plants.

The Iron Weeds, *Vernonia* spp., are tall, leafy-stemmed plants with a crown of purple. They not only inhabit the wet meadows, but are widely distributed throughout the state on several different soil types.

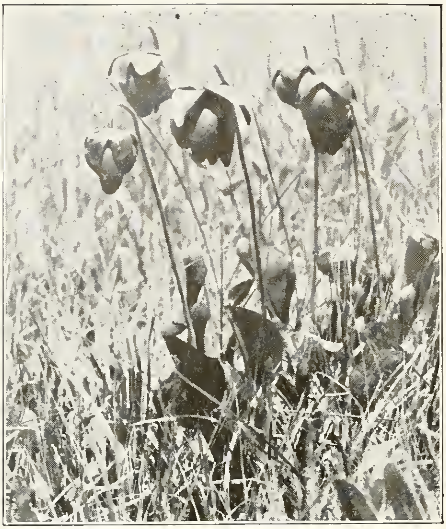
Joe-Pye Weed (*Eupatorium maculatum*) with its thousands of tiny, purplish flowers, reaches an unbelievable size in the shady, wet Magnolia-Nyssa swamps.

The Vanilla Plant or Deer's Tongue (*Trilisa odoratissima*) is characterized by a tall, leafless scape with small clusters of purplish flowers. This is aptly called the Vanilla Plant and deserves recognition because it contains couramin which gives it the strong odor of vanilla. Couramin is frequently added to most commercial grades of vanilla extract.

Two very similar plants, both known as Elephant's Foot, are *Elephantopus nudatus* and *E. tomentosus* whose tiny, purplish flowers add to the ensemble which occurs in the fall.

Marsh Elder, Mule Fat, or Groundseltree (*Baccharis halimifolia*) dresses for the coming of

GENERAL VIEW OF THE PINE FLATS
(Leica photo by C. W. Edgerton)



PARROT'S PITCHER
(Sarracenia psittacina)

frost with a glittering, silvery-white plumage. The flowers are inconspicuous and unattractive, but when the seeds are ready for dispersal by the wind, each one is equipped with a tiny parachute of white bristles which enables them to float through the air. This plant is more abundant in the marshes to the south of the pine flatwoods, and is also widely distributed in other parts of Louisiana. It is one of the few woody shrubs in the Compositae in our region.

TENSAS RIVER

(Continued from Page 4)

the tree has overgrown the marker and it will only be discovered by the lucky sawer who happens to saw down this particular tree.

There is enough rich alluvial soil in this basin to raise half a million bales of cotton, and when one sees it one cannot help but wish that some of the fine concrete highways of North Louisiana had been built down the Tensas River, and thus reclaim this great domain for civilization. Some day, of course, it will be redeemed when it is really needed.

We saw only three small plots of open land in cultivation. We persuaded one of the natives to come to our camp for lunch, and he told us many interesting stories and stayed with us until a horn sounded up the river which he said indicated his presence was wanted at home.

On the last night of camp, we met two hog-raisers who had camped nearby and persuaded them to join their camp with ours. The stories they told us about hog raising, hog dogs, and habits of wild hogs would fill another article like this one.

There was a government house-boat, with a crew of fifteen or twenty men clearing obstructions out of the river. The young men in charge really seemed to be trying to do their work efficiently. We had a splendid lunch with them and heard from their radio that the supreme court had handed down the gold decision, our first touch with civilization.

The writer wishes to say that a trip of this kind would not be enjoyable without a companion who also likes out-door life.

NEW LIGHT ON DUCK BEHAVIOR

(Continued from Page 1)

Lincoln believes that young birds tend to spread indiscriminately throughout their natural range, and only by chance return to the place where they were born. Such behavior is decidedly beneficial to a species, since it prevents the segregation of blood strains which might result in too close inbreeding.

Louisiana's ducks are mostly hatched elsewhere. These findings have, therefore, greater significance for game conservationists in duck breeding states. The restocking of "shot out" areas, even if the new stock breeds successfully, does not mean that the young will return to that place. The importance of artificial re-stocking, therefore, becomes less, while greater emphasis must fall upon reducing the local slaughter of birds that have bred in the locality. Investigations show that certain spectacularly successful introductions of game birds in North America, such as the so-called Hungarian Partridge and the Ring-necked Pheasant, probably owe their success to the fact that these species are not migratory and their young do not scatter far and wide.

An interesting light on duck enemies has recently developed with reference to the Crow. The Crow has become a most serious enemy of breeding ducks in the North. Highly adaptable and successful, the Crow has increased enormously during the past score of years. Logan G. Bennett of Iowa has shown by enumeration of duck nests destroyed that the Crow becomes dangerous only when nesting cover is insufficient. Reduction in numbers of Crows through any program of shooting is, therefore, incomplete in effects unless at the same time adequate duck cover is furnished and preserved.

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The Live Oak Society

By
EDWIN L. STEPHENS
President, Southwestern Louisiana Institute,
Lafayette, Louisiana

(EDITORIAL NOTE: *Dr. Stephens' "Live Oak Society", which herewith presents its constitution, should find a welcome and a fellowship with the program for State Parks in Louisiana. The State Parks Commission has set forth its policies in "Louisiana State Parks, the Problem and Answer", its recent First Annual Report to Governor Allen. Dr. Stephens' unique and ingenious society, whose membership have both the wisdom of age and the wisdom of silence, will turn the eyes of the Southland again to the beauties of its oaks.*)

IN an article in the Louisiana Conservation Review last April, under the title of Walt Whitman's line "I Saw in Louisiana a Live Oak Growing", I proposed the organization of a Louisiana Live Oak Society. I ventured to set up claims for Louisiana as being preeminently the logical and specially recognized habitation of the live oak. These claims have not yet been overthrown, but they have brought occasional demurrers from some of the other coastal States, such as Mississippi, Florida, Alabama, Texas, Virginia, and California! Mr. C. E. Dobson of New Orleans, writes that there is a remarkable grove of live oaks near the Naval Hospital at the Pensacola Naval Aviation Station. I assume that this may be the site of the live oak culture conducted by the administration of President John Quincy Adams a hundred years ago, for the purpose of producing timbers for future American battleships. This scheme, however, was abandoned by the succeeding administration. Mr. H. B. Rust of Baldwin County, Alabama, now in Boston, Massachusetts, and preparing a book on the oaks of the United States, lays claim to some very fine specimens of the live oak in Alabama. Burtt Potter, Esq., of Aransas Pass, Texas, writes that a famous live oak in that state, near Rockport, can claim comparison with the best in Louisiana. Doctor James H. Dillard, of Charlottesville, Virginia, writes that he thinks he recalls some grand old specimens on the old campus of William and Mary College, while Professor Mill-

Photograph by E. L. Stephens.

"Surprise Oak" at Pointe-aux-Chenes, in Ocean Springs, Mississippi.

Photograph by E. L. Stephens.

"Guardian of the Gate"—the Robert Martin Live Oak on Southwestern campus.

edge L. Bonham of Hamilton College, is pretty sure that the prize among the oldest and finest live oaks would be taken by some aboriginal trees on the military reservation of Fort Monroe in Virginia. And this claim is largely corroborated in a letter from Captain Harrington W. Cochran of the 51st Coast Artillery, Adjutant of the military post at Fort Monroe, who sends an airplane photograph of the location and says the live oaks average 9 feet and that one of them measures 17 feet, 6 inches, in circumference, and that all of them withstood the terrible hurricane of August 3, 1933, with little damage. He said: "We have been told that this is the most northern location of live oaks along the Atlantic seaboard". Mr. Harold P. Huls, City Attorney of Pasadena, California, writes that the live oak trees of the Pacific Coast are of so excellent a character as to rival the best that I have claimed for Louisiana. Then there is Mississippi: Mrs. James R. Leavell of Chicago, writes of a live oak grove of surpassing beauty on her place, "Doonegate", on the Mississippi coast ten miles west of Ocean Springs. This last claim has brought me to book; for upon having occasion to investigate the Mississippi coast, I was obliged to admit that the splendid live oak groves, avenues, and individual trees to be found in and near Ocean Springs and Biloxi are worthy of a place along with the best we have in Louisiana. So we have decided not to name our organization "The Louisiana Live Oak Society", but simply, "The Live Oak Society", which will include the eligible members from everywhere.

The proposal of such an organization was widely hailed with approval in principle, and many letters of appreciation were received; letters, among others, from my friend the late Leon Locke, of Lake Charles; Mr. H. H. White, of Alexandria, President, State Board of Education; Mr. John M. Caffery of Franklin; Mr. Allen Eaton, of the Department of Surveys and Exhibits of the Russell Sage Foundation, New York; the late Mr. R. B. Mayfield, Editor of the Times-Picayune, who expressed an editorial appreciation in the issue of May 13, 1934; Superintendent Nicholas Bauer of New Orleans; President Richard G. Cox of Gulf Park College; President David M. Key of Millsaps College; President Pat Neff, of Baylor University; Chancellor Alfred Hume of the University of Mississippi; and others. Mr. Locke wrote interestingly from his bed, in almost the last week of his life: "I enjoyed your quotation from Whitman, 'I Saw in Louisiana a Live Oak Growing'. I remember these lines in that poem:

'All alone it stood and the moss hung
down from its branches;
Without any companion it grew there,
uttering leaves of dark green;'

and I enjoyed and appreciated your remark on his 'Leaves of Grass' as being *'dark and shady'*. It is *'shady'* in places. I am reminded of Swinburne's comment; it was many years ago, and I cannot avouch to accuracy—something like this: 'His Venus is a Hottentot wench besotted with Cantharides and Rum'. Someone said he should have exchanged his title (Leaves of Grass) with Bill Nye, who wrote 'Baled Hay'. In attending school as a boy, I wrote 'The Woods of Maine' in rhyme, and it went into the records of Professor Oscar E. Olin, later the president of A. & M. College, Manhattan, Kansas. I hope it never survived, for it was faulty in rhyme and far from excellent in botany; but I made a fine collection of woods, the bark showing with a section of the trunk, and gave it to the school".[1]

Mr. White wrote: "In your proposed 'Live Oak Society' you have launched a new idea. I expect something to come of it—something worthwhile".

Mr. John Caffery said: "I am here on account of live oaks. In a way they are my ancestors. My grandfather came to Louisiana a century and a quarter ago as a live oak forest inspector. My family has had a devotion to live oaks amounting almost to reverence. I look upon these grand old live oaks as my dear old aunts and uncles and great-aunts and great-uncles! What an inspiration a sturdy live oak is to our frail humanity to take on more strength." Mr. Mayfield in his editorial in the Times-Picayune, said: The plan "cannot fail to have both aesthetic and sentimental interest for nature lovers everywhere and especially in New Orleans. This live oak association is to be composed, not of human tree lovers, but of the trees themselves—a thought recalling our childhood days when great trees became giants and ogres and even moved about in the forest * * *

"Although New Orleans cannot claim either first or second place in the hierarchy of trees

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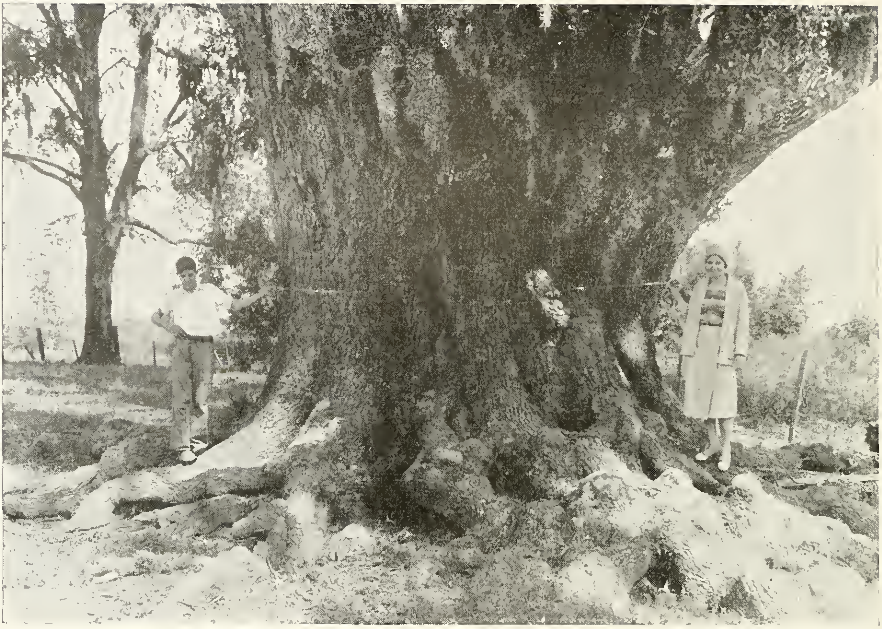
[1] This comment on Whitman reminds me of what Sidney Lanier said about him: "Whitman is poetry's butcher. Huge raw collops slashed from the rump of poetry, and never mind gristle, is what he gives us to feed our souls. His argument seems to be: Since a prairie is wide, therefore debauchery is admirable, and since the Mississippi is long, therefore every American is God!" Lanier must doubtless be considered Live Oak Poet Number One, on account of his live oak lines in many poems, such as "The Marshes of Glynn"; but, on the other hand, we ought to give the title of Live Oak Poet Number Two to Whitman—if for nothing else but that line: "I Saw in Louisiana a Live Oak Growing". It should be remembered that, for all of the curious things in his verse, he did write "Drum Taps", "The Place Where a Great City Stands", "Chanting the Square Deific", "I Sing the Body Electric", and "O Captain! My Captain"—and so much else.—E. L. S.

Photograph by E. L. Stephens.

Dr. Ellsworth Woodward, Director Emeritus of the Newcomb College School of Art, and one of his paintings of live oaks in Paradise Grove, Breaux Bridge.



Photograph by E. L. Stephens.

Trunk of the Arnaud Robert Live Oak, near Cecilia. 33 feet, 4 inches. "First Vice-President" of the Live Oak Society.

listed among the charter members of the proposed society, it holds third and fifth places in the list, with the 'George Washington' and his wife 'Martha' in Audubon Park. And, even though we are widely outmeasured by the 'Number One' tree, the latter is not far distant from our city. It is the Locke Breaux Live Oak, on the Mississippi River, four miles above Hahnville in St. Charles Parish, and thus only about thirty miles from New Orleans. Not only is this tree largest, with its thirty-five foot girth, and one hundred and sixty-six foot spread of limb, but also it is perhaps the most complete in form of all Louisiana association members".

My friends among college presidents and educational officials, and many others, wrote letters acclaiming the plan and commending the development of the idea of great appreciation for live oaks.

Mr. Allen Eaton, who is in the office of the Department of Surveys and Exhibits of the Russell Sage Foundation, New York, comes through with financial support for our suggestion that the beautiful Paradise Grove near Breaux Bridge should be purchased and converted into a public park. He enclosed a one-dollar bill as a contribution to that end. When we raise ninety-nine more he will give another, then another for each ninety-nine more until we reach five hundred dollars. "This seems a little thing", he says, but suggests that from such small beginnings sometimes come large results—as in the case of an oak tree from an acorn. I have placed this dollar on deposit in the First National Bank to the credit of the Paradise Grove Fund. And I have had some correspondence with Mr. Alexis Voorhies of New Iberia, upon the question of the lowest price at which he would sell the grove property. He says that he formerly held it at $10,000, when times were booming, but that now he would sell it for $7,000. If this is the "low down", and if we can get the city of Breaux Bridge and the parish of St. Martin to pay the greater part of the cost (the grove is right on the edge of Breaux Bridge), perhaps we may be able to get friends of the live oak to follow the example of Mr. Eaton and raise a sufficient amount to buy this property and convert it into a public park. If we could do it quickly, perhaps the ERA would help to fix it up. This would be a worthy first project of the new Society.

The membership plan of the Live Oak Society is, that to become a regular member, one must be a live oak either known or suspected to be a hundred years old. Young live oaks are eligible to form branches of the Junior League. The first branch of the Junior League is that of Southwestern campus, which now has more than one hundred live oaks, including eighteen that are exactly the age of the Twentieth Century, having been set out on January 1, 1901. Plantings have been made from the acorns of its principal member (The Robert Martin Live Oak, guardian of the gate), and a wide distribution of the off-spring of this tree has been made among Southwestern alumni. A number of these trees have been given to Audubon Park, at the instance of Mr. Claude Rordam; and Mr. Neelis, the Superintendent, has planted them in a special Southwestern Row in the southwestern corner of the Park. We also gave more than a hundred young oaks to our friend, the late Clarence Pierson, who was Superintendent of the State Hospital at Pineville; he placed them on the beautiful hospital grounds. We sold three hundred young live oaks from acorns of one of these "Twentieth Century" oaks to the Young Men's Business Club of Beaumont, Texas, where they were planted in various parks of that city about five years ago. Since 1928 I have been measuring the circumference of the eighteen "Twentieth Century" live oaks on the campus each New Year's Day. The measurements for 1929 and 1932 have been mislaid, but the following is a tabulation of the measurements for the other years:

No.	Remarks	1928..	1929..	1930..	1931..	1932..	1933..	1934..	1935..
1	Robert Martin...	6-0	..	6-4	6-6	..	7-2	7-3	7-4
2		5-1	..	5-7	5-10	..	6-7	6-9	7-0
3		5-7	..	6-1	6-4	..	7-0	7-3	7-3
4		5-10	..	7-0	7-2	..	7-3	7-5	7-7
5	Corner	6-6	..	7-0	7-3	..	7-10	7-11	8-0
6		5-6	..	6-1	6-3	..	6-9	7-0	7-1
7		5-5	..	6-1	6-3	..	6-5	6-9	6-9
8		5-6	..	6-1	6-3	..	6-9	6-11	7-0
9		6-1	..	6-10	7-1	..	7-3	7-5	7-7
10		4-11	..	5-3	5-4	..	5-9	5-11	6-0
11		6-1	..	6-5	6-6	..	7-1	7-4	7-6
12		4-11	..	5-4	5-6	..	6-0	6-3	6-5
13		5-8	..	6-2	6-4	..	6-11	7-1	7-4
14		7-11	..	8-1	8-2	..	8-4	8-8	8-8
15	A double; cannot be accurately measured for comparison here.....	9-0	..	10-0	10-4	..	11-1	11-7	10-9
16		6-0	..	6-2	6-3	..	7-1	7-2	7-4
17		6-5	..	6-9	6-11	..	7-3	7-5	7-8
18		5-3	..	5-6	5-8	..	6-2	6-3	6-5

Photograph by E. L. Stephens.
Avenue of live oaks, St. Charles College, Grand Coteau, La.

The average rate of growth in circumference of each tree during the past seven years is shown from this table to have been 17.3 inches. This is found by subtracting the sum of the 1928 measurements from the sum of the 1935 measurements and dividing by 18 (the number of trees). This gives an average of 17.3 inches per tree for the seven years, or 2.4 inches per year.

The Stanley Martin Oak, dedicated to our Great War hero, which was set out February 22, 1919, has increased in circumference of trunk, four feet above the ground, from 18 inches on January 1, 1928, to 39 inches on January 1, 1935. This tree has been given a stone marker by the Stanley Martin Post of the American Legion.

Southwestern campus donated two live oaks to the campus of Baylor University during the past year, to be set out in honor of the late Professor James F. Greer, and the late President S. Palmer Brooks of that institution, who were my warm personal friends for many years past—the former being one of my best-loved teachers fifty years ago, the latter an associate college student forty-two years ago.

A sad story has come out of Natchitoches in connection with the famous St. Denis Oak, which I named in the article referred to, of last year, as being an eligible charter member of the Live Oak Society. Professor W. J. Avery of the State Normal College informed me that everything would be all right if the big tree in the American Graveyard were a live oak—but, alas! it is a red oak! That is just too bad! The only chance I see now for Natchitoches to get into the charter membership is to boost the Rich Williams live oak on Second Street. Its trunk is only 12 feet, 3 inches in circumference, but it is a real live oak and may be it is a hundred years old—I don't know.

The Live Oak Society is now an established fact. The annual dues for the past year have already been paid by the Miramar Oak of Pass Christian, Mississippi. It was too late for them to send acorns, so they shipped us twenty-five live oak seedlings taken from under its noble 140-foot spread. The Constitution and By-Laws are hereby officially published, as follows:

THE LIVE OAK SOCIETY

CONSTITUTION AND BY-LAWS

Preamble

Whereas the Live Oak is one of God's creatures that has been keeping quiet for a long time, just standing there contemplating the situation without having very much to say, but only increasing in size, beauty, strength, and firmness, day by day, without getting the attention and appreciation that it merits from its anthropomorphic fellow-mortals; and

Whereas it has been found that organization and publication are a good means of promoting influence and service in the world; therefore

This Constitution for an universal association of Live Oaks is hereby ordained and established.

ARTICLE I

Name

The name of this association shall be The Live Oak Society.

ARTICLE II

Domicile

Its domicile shall be Lafayette, Louisiana.

ARTICLE III

Branches

Branches of the Society may be formed in Ocean Springs, Mississippi, Pointe-aux-Chenes, New Orleans, and other places on the map, wherever the F. L. O. gets itself sufficiently expressed (F. L. O., i. e., Feeling for the Live Oak).

ARTICLE IV

Object

The purpose of the Live Oak Society shall be to promote the culture, distribution, and appreciation of the live oak.

ARTICLE V

Membership

The membership of the Society shall consist of designated individual live oak trees, known or suspected to be more than one hundred years old.

Live oaks less than one hundred years old, possessing honorable qualifications, will be eligible to be enlisted in the *Junior League.*

ARTICLE VI

Officers

Section 1. Officers of the Society shall be (1) a President, (2) some Vice-Presidents, (3) a Committee of Elders, and (4) a Group of Illustrious Individual Specimens.

Section 2. The Locke Breaux Live Oak near Hahnville, St. Charles Parish, Louisiana, shall be the first President. Thereafter the largest live oak in the Society shall be declared President at the next Semi-Occasional meeting after its description and location shall be ascertained.

Section 3. The first roster of officers shall be as follows: President, the Locke Breaux Live Oak (near Hahnville); 1st Vice-President, the Arnaud Robert Live Oak (above Breaux Bridge); 2nd Vice-President, the George Washington Live Oak (Audubon Park); 3rd Vice-President, the Luling Live Oak; 4th Vice-President, the Martha Washington Live Oak (Audubon Park). Committee of Elders: The Mays Live Oak (Rosedale), Chairman; the Jamison Live Oak (Thibodaux); the Kaplan Live Oak (near Intracoastal City); the Maryland Live Oak (New Roads); the Potier Live Oak (Parks, La.). Group of Illustrious Individual Specimens: The Gebert Live Oak (New Iberia), Chairman; the Kenner Ferry Live Oak (west bank); the Joe Jefferson Live Oak (Jefferson Island); the Grover Cleveland Live Oak (Avery Island); the McDonogh Live Oak (City Park, New Orleans); the Cathedral Live Oak (Lafayette); the Mossler Live Oak (BonFouca); the Miramar Live Oak (Pass Christian); the

John Ruskin Live Oak (Ocean Springs); the Lorna Doone Live Oak (Pointe-aux-Chenes); the Henry Watkins Allen Live Oak (near Baton Rouge); the Thomas D. Boyd Live Oak (Baton Rouge); the Evangeline Live Oak (St. Martinville); and the Archangel Live Oak (Paradise Grove, Breaux Bridge).

Section 4. Officers shall be designated at the Semi-Occasional meetings.

ARTICLE VII

Representation

For the conduct of the Society's Human-Relations business, a representative (either the owner or some other interested person), shall be designated as Attorney for each member.

ARTICLE VIII

Meetings

Meetings shall be held somewhere, semi-occasionally.

ARTICLE IX

Annual Dues

The annual dues shall be twenty-five (25) acorns from each member, payable on or about New Year's Day—preferably, sometime previous or subsequent to the day, or else on the day itself. These acorns shall be planted in the Live Oak Nursery of the Southwestern Louisiana Institute Farm, Lafayette, Louisiana, and shall be distributed before the end of each year, to make room for the next year's crop. Small seedlings may be accepted instead of acorns.

Small live oaks will be shipped to the people from this nursery at any time upon application, without cost other than the actual cost of handling and transportation.

ARTICLE X

Amendments

This Constitution can be amended at any Semi-Occasional meeting.

BY-LAWS

1. *Acting Secretary*

The records and correspondence of the Society shall be attended to for the first little while by the President of Southwestern Louisiana Institute, who shall be designated as the Acting Secretary (there will be no real Secretary!).

2. *Official Organ*

The official organ of the Society shall be the *Louisiana Conservation Review.*

3. *Quercometrical Data*

Representatives shall be required to obtain and report accurate data as to (1) Circumference of members (measurement of trunk in feet and inches, four feet above the ground); (2) Approximate height; (3) Diameter of spread; (4) Date of measurements. And these data shall be recorded by the Acting Secretary in a suitable book and preserved for future comparison to show rate of growth of live oaks.

4. *The Live Oak in Song and Story*

Friends of live oaks everywhere are to be encouraged to contribute not only descriptions, photographs, and statistics of measurement, but also poems and stories of historic and literary interest concerning live oaks.

5. *The Live Oak in Libraries*

Librarians are requested to specialize on live oaks in their collections, and assist in extending live oak appreciation among the people.

6. *No Whitewash*

Members shall not be whitewashed. Violations of this law shall be punished by expulsion—and the attorneys for such members shall be disbarred from practice.

7. *No Advertisements*

No member of the Society shall be desecrated with advertisements.

8. *No Quercocide*

Thou shalt not kill! This law shall apply to members of the Live Oak Society and the Junior League. Destruction of a live oak will not be permitted except by Act of the Legislature.

9. *Amendments*

These By-Laws shall not be amended except on a Sunday or holiday or some secular day of the week, or else some night.

Notarial Record

Done before me, the Robert Martin Live Oak, at my official position at the front gate of Southwestern Louisiana Institute, this first day of February, A. D., 1935, in the presence of the Stanley Martin Live Oak (set out February 22, 1919), and also of seventeen "Twentieth Century" live oaks besides myself (set out January 1, 1901), together with one hundred other small live oaks on Southwestern Campus (about ten years old).

(Signed) THE ROBERT MARTIN LIVE OAK.

(Seal)

LIST OF CHARTER MEMBERS AND THEIR ATTORNEYS

(The numbers after each indicate size of circumference of trunk, four feet above the ground, in feet and inches).

	NAME OF LIVE OAK	PLACE	SIZE	ATTORNEY
1.	Locke Breaux	Hahnville	35	Mrs. S. Locke Breaux
2.	Arnaud Robert	Cecilia	33-5	Mrs. Arnaud Robert
3.	George Washington (Audubon Number One)	Audubon Park	28-6	Mr. Frank E. Neelis
4.	Luling	Luling	27-8	Mr. Charles S. Lagarde
5.	Martha Washington (Audubon Number Two)	Audubon Park	27-6	Mr. Frank E. Neelis
6.	Mays	Rosedale	27-6	Mrs. Leila Barrow Mays
7.	Lastrapes	Washington ("d'ici")	27-3	Miss G. Hebrard
8.	Jamison	Thibodaux	27-2	Mr. Preston Pugh
9.	Kaplan	Intracoastal City	27-1	Mr. G. P. Sledge
10.	Parks, Number One	Parks, La.	27-0	Mr. Lloyd Resweber
11.	Bishop	Fulton, Texas	25-6	Mr. Burtt Potter
12.	Maryland	New Roads	25-3	Mrs. Blanche Way Lecoq
13.	Voorhies (Parks Number Two)	Parks	25	Mr. C. C. Potier
14.	Mossler	Bon Fouca, La.	24	Mr. J. Mossler
15.	Audubon, Number Three	Audubon Park	23-10	Mr. Frank E. Neelis
16.	St. Germain	Breaux Bridge	23-7	Mr. A. J. Cormier
17.	Grosse Tete	Rosedale	22-6	Mrs. Lelia Barrow Mays
18.	Stonaker	New Roads	22-2	Mr. A. McFarland
19.	Kenner	Kenner	22-2	Mr. S. J. Barbre
20.	Joe Jefferson	Jefferson Island	22-2	Mr. J. C. Gordy
21.	Grover Cleveland (Avery Island Number One)	Avery Island	22-0	Mr. E. A. McIlhenny
22.	McDonogh	City Park, New Orleans	21-8	Mr. George E. Vinnedge
23.	Avery Island Number Two	Avery Island	21-7	Mr. E. A. McIlhenny
24.	Gosserand	New Roads	21-5	Mr. A. McFarland
25.	Avery Island Number Three	Avery Island	21-3	Mr. E. A. McIlhenny
26.	New Iberia, Number One	New Iberia	21	Mr. W. J. Burke
27.	Parks, Number Three	Parks	20-7	Mr. Lloyd Resweber
28.	Catholic Cemetery	Lafayette	20-6	Monsignor A. F. Isenberg
29.	Pere Rochard	Breaux Bridge	19-11	Mr. A. J. Cornier
30.	Grenier	Thibodaux	19-10	Mr. Walter Lafargue
31.	Rosedale	Rosedale	19-6	Mrs. Leila Barrow Mays
32.	Audubon, Number Four	Audubon Park	19-5	Mr. Frank E. Neelis
33.	Archangel of Paradise Grove	Breaux Bridge	19-2	Mr. Alexis Voorhies
34.	Joe Mouton	Lafayette	19-0	Mrs. Joe E. Mouton
35.	Cathedral	Lafayette	19-0	Monsignor A. F. Isenberg
36.	Lorna Doone	Pointe-aux-Chenes	18-5	Mrs. J. R. Leavell
37.	Singleton	Carencro	18-3	Mrs. P. M. Girard
38.	G. A. Martin	Lafayette	18-3	Dr. G. A. Martin
39.	Audubon, Number Five	Audubon Park	18-3	Mr. Frank E. Neelis
40.	Broussard	Broussard	18-0	Mr. J. C. Landry
41.	Thomas D. Boyd	Baton Rouge	18-0	Mrs. Annie Boyd Grayson
42.	Uncle George (This is a charred trunk)	Mobile, Alabama	17-8	
43.	Protestant Cemetery	Lafayette	17-6	Mrs. P. M. Girard
44.	Shady Grove	Iberville Parish	17-3	Mr. W. L. Rather
45.	Gebert	New Iberia	17-0	Mr. Lee Gebert
46.	John Ruskin	Ocean Springs, Miss.	17-0	Mr. H. Flateau

The following live oaks, measuring less than 17 feet in circumference of trunk, are added to the list of Charter Members, "On Suspicion". They may not be 100 years old—and then again maybe they are. We are looking around for some veteran of 125 or 130 years of age to give testimony on this point:

NAME	PLACE	SIZE	ATTORNEY
Court House	Napoleonville	16-9	Miss Jo Talbot
Miramar	Pass Christian	16-5	Mr. Walter L. Read
Surprise	Doonegate	16-5	Mrs. J. R. Leavell
Whittington	Lafayette	16-4	Mrs. G. J. Gueriniere
Henry Watkins Allen	Bayou Sara Road	16-0	Mrs. A. J. Stanley
St. Francis	St. Francisville	15-10	Mr. Robert E. Watson
Chargois	Lafayette	15-6	Mr. Joseph A. Chargois
Duncan Park	Natchez	15-5	Mrs. Balfour Miller
Country Club	New Orleans	15-0	Mrs. J. P. Cordell
Evangeline	St. Martinville	14-2	Mr. Andre Olivier
Rich Williams	Natchitoches	12-3	Mr. W. J. Avery

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Outline of Louisiana and Mississippi Pottery Horizons

By J. A. FORD
Louisiana State University

THE most promising means to an understanding of the story of the lower Mississippi River Valley before 1700, the beginning of reliable documented history, lies, as explained in an article in the January issue of the *Conservation Review,*[1] in the studies of styles of pottery made, used, broken and cast aside as garbage on the sites of the old towns. By discovering the time sequence of the various modes of ceramic ornamentation, a scale or chronology is outlined by which old ruins may be dated, movements of people and of culture be detected, and eventually it is hoped, the origins of the American Indians and their peculiar cultures may be known. Like the geological chronology, this scale can be approximated only in terms of periods of years.

It is not the present purpose to detail the theories and the stages of the research which for the past few years has been directed toward this end in both Mississippi and Louisiana, but rather to present an outline of the indicated results in such a way that those who are sufficiently interested may by gathering a few dozen decorated potsherds determine for themselves with fair accuracy the relative antiquity of ancient towns. It frequently occurs that historians, attempting to find aboriginal towns mentioned in early documents go blithely forth and select the nearest impressive group of mounds, when an elementary knowledge of the archaeological chronology would show from the material occurring on the site that it had been abandoned long before the voyage of Columbus.

The sites within the areas, as shown on the map (Fig. 1), divide themselves according to the pottery decorations found on them into seven broad groups called "complexes". Some of these complexes were contemporaneous in different areas, hence they all fall into three main time divisions as follows:

III. Youngest. Used about 1700 and immediately before. Choctaw, Natchez, Tunica and Caddo. These complexes are named after the historic Indian tribes with which they have been identified.

II. Intermediate. Did not extend to historic times, and were mostly abandoned before the historic types came into vogue. Coles Creek and Deasonville. Named for type sites.

I. Oldest. Abandoned before the intermediate complexes became predominant. Marksville. Named for type site.

There are indications that several of these complexes extend far outside the regions indicated on the map, but the details of their re-

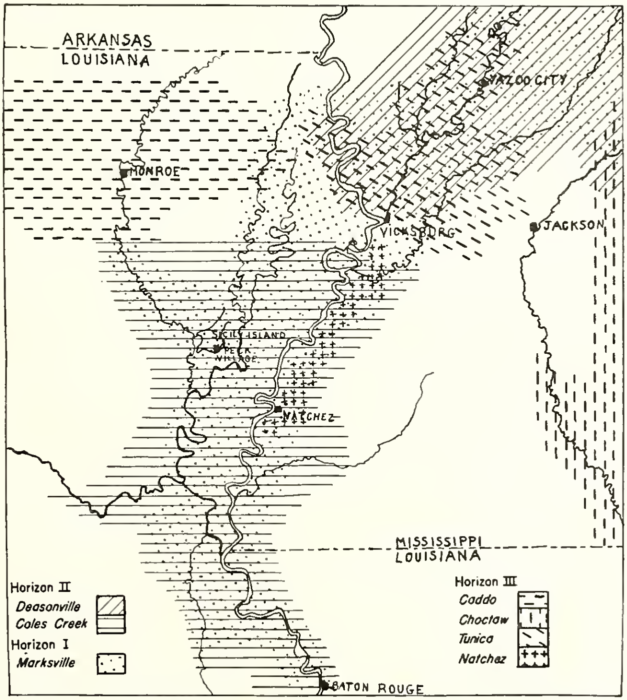

Fig. 1. Map Showing Distribution of Pottery Complexes in the Lower Mississippi Valley

lations there must be the subject of future field work.

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[1] Ford, J. A., "An Introduction to Louisiana Archeology," Louisiana Conservation Review, *La. Dept. Consv.,* Vol. 4, Jan., 1935, pp. 8-11.

These "ceramic complexes" are so called from the fact that they consist of a small group of often unrelated pottery design types which were fashionable in the same region at the same time. In like manner our present clothing complex consists of certain types of clothing for men's business and evening wear, and peculiar costumes for boys, women and girls at different times of the day. These specific types make up the present clothing complex of our region; they were somewhat different last year, and next year's styles will incorporate more changes.

Excepting the Caddo and Choctaw complexes which extended up to the historic period, but for whose exact connections with the past there is yet insufficient data, the time sequence of the Lower Mississippi Valley design complexes are shown in the graph (Fig. 2). Time is represented vertically with the oldest complex, the Marksville, at the bottom, and the recent or historic Tunica, Caddo, Choctaw and Natchez cutting the horizontal line near the top. This line denotes the year 1700 A. D. These latest native pottery styles died not long after this date as the Indians adopted the white man's trade utensils and the making of pottery became a lost art.

How far into the past this scale extends is a question which it is impossible to answer satisfactorily at present. Various estimates of from 800 to 2000 years have been made for the Hopewell Culture with which the Marksville pottery complex is identified. These are admittedly guesses.

At the earliest period considered in this chronology, the Marksville complex of pottery designs held sway throughout the entire area. The second or intermediate period was marked by a replacement of Marksville in the southern part of the area by Coles Creek and in the north by Deasonville. Then in the third and last period, sometime before the invasion of the Europeans, Coles Creek disappeared giving way to Natchez, Caddo and other unidentified historic types, while Tunica, and to some extent Choctaw, took over the region of the Deasonville pottery.

Drawings of potsherds and a few vessel shapes representative of each of seven complexes are shown in figures 3 to 12. Almost every sherd is marked with a type number which can be disregarded except in selecting the decorations that numerically predominate the various complexes as indicated in Table II. Other features listed in the same table will assist in identifying village site collections.

The features of bottle shapes, handles and shell tempering it will be noted appear in the period II in the Deasonville complex and extend up to the historic types. They are not found in the Marksville complex.

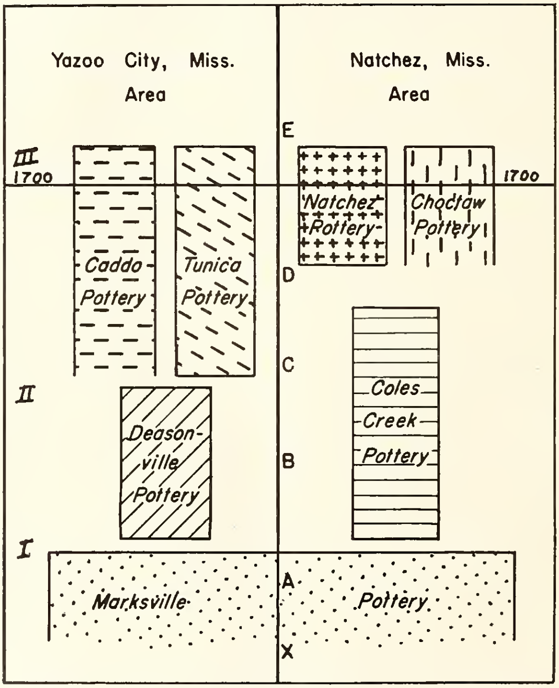

Fig. 2. Diagram of Lower Mississippi Valley Chronology

Ceramic complexes found on Louisiana Indian village sites very rarely, except in the case of the Marksville, occur unassociated with potsherds representative of some other complexes. There is, however, system to this mixing of complexes. It can usually be attributed to one or two causes. Mixture often results from trade or borrowing of ideas having occurred between neighboring, contemporaneous complex areas, so that foreign designs become incorporated in the village refuse

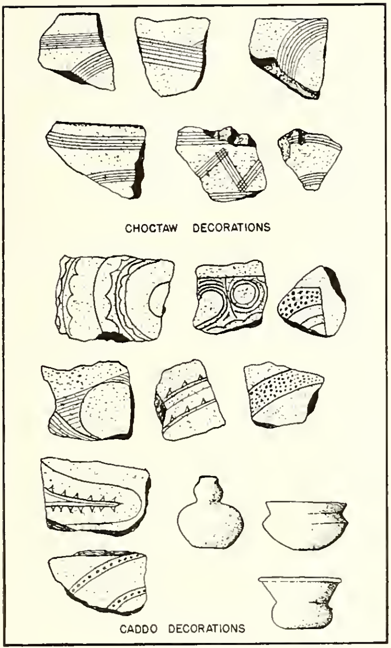

Fig. 3

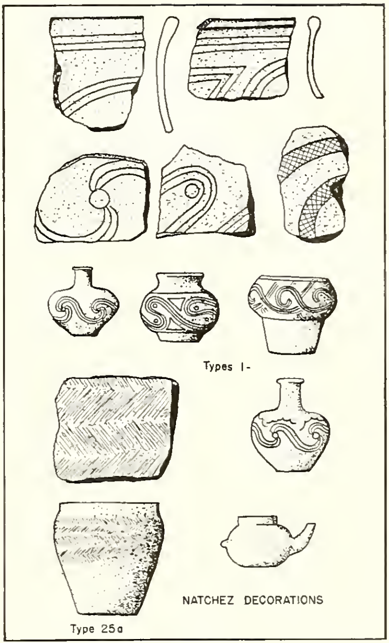

Fig. 4

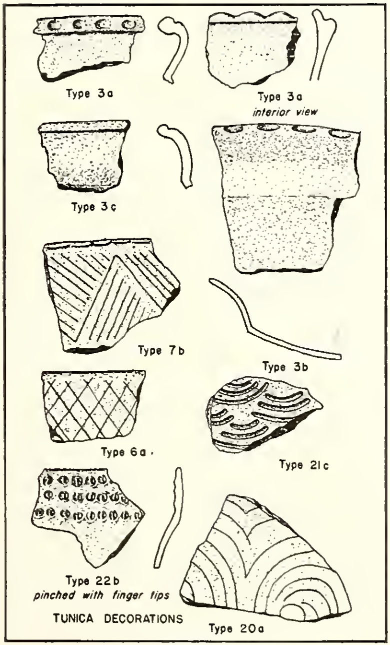

Fig. 5

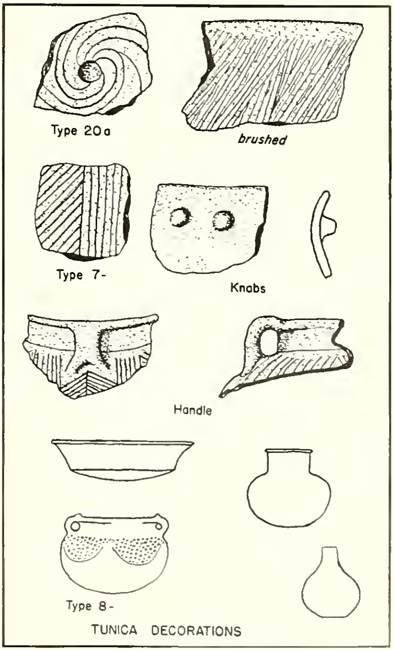

Fig. 6

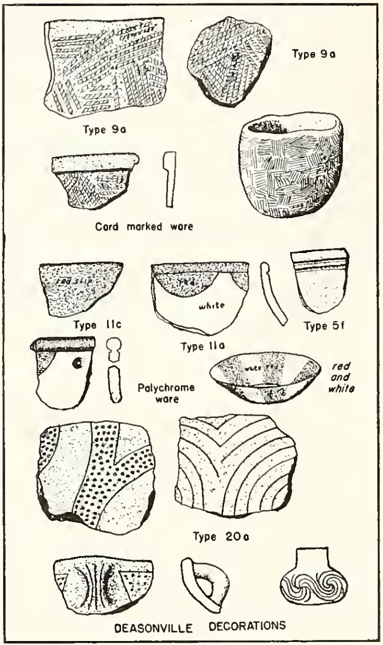

Fig. 7

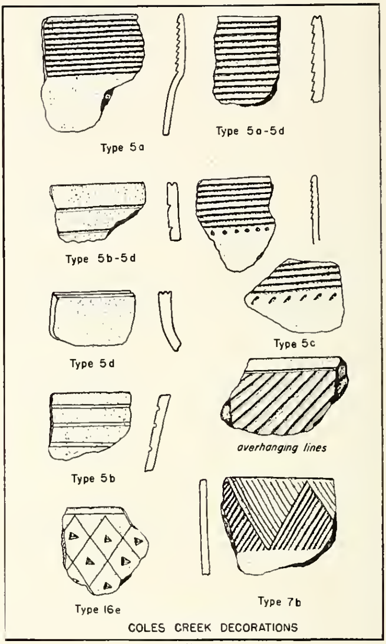

Fig. 8

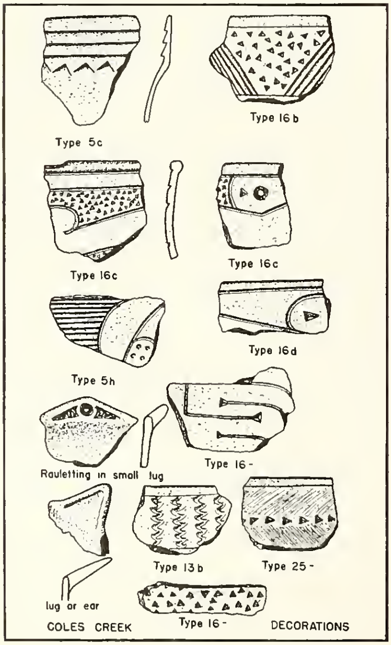

Fig. 9

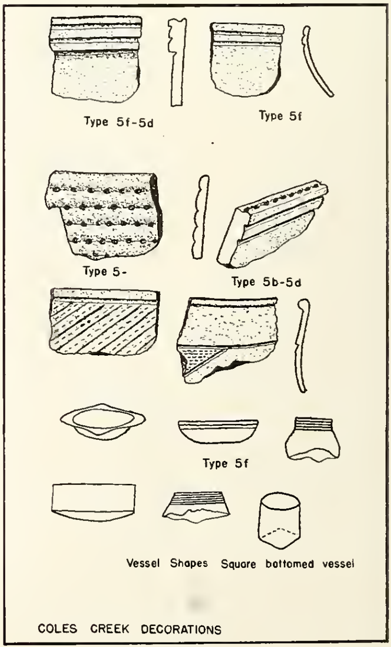

Fig. 10

dumps. To explain the second cause of mixture, the average Indian village site must be conceived as having been settled, occupied for a longer or shorter period of time and then abandoned. In relation to the total time covered by the chronology under consideration the period of occupancy is very brief. Abandonment may have resulted from depletion of arable land or similar cause, while superstitious fear prevented the old sites from being reinhabited except in a few cases. The village dump or midden deposit was accumulated during the years of occupancy, and if had reached any appreciable depth would show by changes in types of artifacts from the bottom to the top the transitions in style which had occurred while the town was alive. However, the great majority of Louisiana sites never had any great accumulation so that younger and older types are hopelessly intermingled. For this reason it is fortunate that the brief tenure of the sites usually prevented the deposition of more than two subsequent design complexes.

TABLE I

Village Settled at Time	Village Abandoned at Time	Area of N. La.-W. Central Miss.		Area of S. La.-S. W. Miss.	
		Major Proportion	Minor Proportion	Major Proportion	Minor Proportion
D	E	Tunica	Natchez Caddo Choctaw	Natchez	Tunica Caddo Choctaw
C	D	Tunica	Coles Creek	Coles Creek	Tunica
B	D	Tunica Deasonville	Coles Creek	Coles Creek	Tunica Deasonville
B	C	Deasonville	Coles Creek	Coles Creek	Deasonville
A	B	Deasonville Marksville	Coles Creek	Coles Creek Marksville	Deasonville
X	A	Marksville		Marksville	

The combinations of complexes on any one site which have been observed seem in average cases to be due to the above two conditions and are listed in the following table (Table I). It will be noted that there are four complex areas involved in time horizon III, three in horizon II and only one in horizon I. The letters in the time column at the left of the diagram refer to the chronological diagram (Fig. 2). As would be expected, the major proportions of any specific collection consist of the sherds representative of the styles in the region in which the village is located, while designs introduced from neighboring areas form minor proportions.

Of course a skeleton time scale such as this is only a means to the end of recovering all possible knowledge of the history and manner of living of the original Americans. Innumerable details must be discovered and fitted into their proper places in the story. In considering and applying this brief outline three points should be borne in mind: that collecting surveys on which this work is based have been confined to the areas indicated on the map (Fig. 1); that few of the historic pottery types of the area are known at present; that most definitely this outline at the present stage of knowledge cannot be considered as conclusive. It is merely a tool which may lead to a better understanding. Although this chronology is indicated by the present evidence, no follower of science worthy of the name would object to a complete reversal of opinion in the face of convincing evidence of error.

TABLE II.—LIST OF CHARACTERISTICS OF LOWER MISSISSIPPI VALLEY POTTERY COMPLEXES

TIME PERIOD	COMPLEX	PREDOMINANT DESIGNS	VESSEL SHAPES	HANDLES	TEMPER[1]
III	Caddo	Unclassified See figure 3	Pot Bowl Bottle	Present	Grit Crushed potsherds Shell
	Choctaw	Unclassified See figure 3	Pot Bowl Bottle	Present	Grit Crushed potsherds Shell
	Natchez	Type I See figure 4	Pot Bowl Bottle	Present	Grit Crushed potsherds Shell
	Tunica	Types 3a, 3b, 3c See figures 5, 6	Pot Bowl Bottle	Present	Grit Crushed potsherds Shell
II	Deasonville	Types 9a, 11a, b, c See figure 7	Pot Bowl Bottle	Present	Grit Crushed potsherds Shell
	Coles Creek	Types 5a, b, c, d, e, f See figures 8, 9, 10	Pot Bowl	Absent (Lugs or ears)	Grit Crushed potsherds
I	Marksville	Types 12a, 14a See figures 11, 12	Pot Bowl	Absent	Grit Crushed potsherds

[1] Temper is hard material worked into clay while plastic to prevent cracking when vessel is fired.

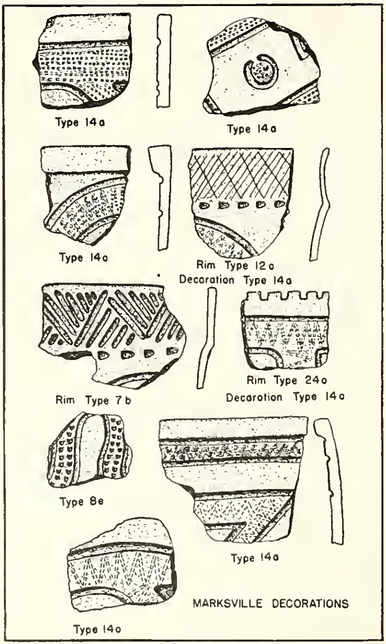

Fig. 11

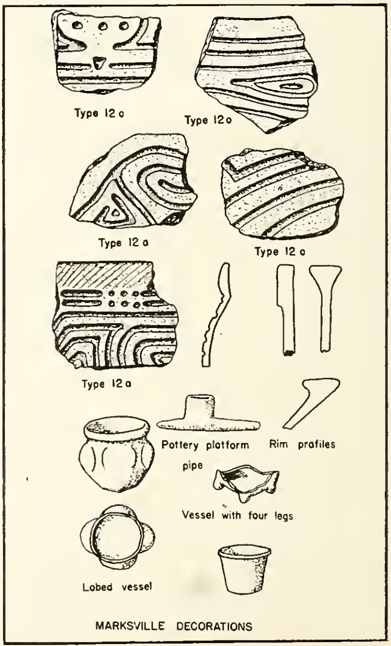

Fig. 12

Farmers of Forty Centuries Speak to the Farmers of America

By MRS. INEZ MARKS LOWDERMILK
Wife of the Vice-Director, Soil Erosion Service
U. S. Department of the Interior

National Broadcasting Company, Farm and Home Hour, March, 22, 1935

DOUBTLESS many of my radio audience think of China in terms of famines, floods and low standards of living. The 1933 Census gives China a population of 492,000,000 people. Almost a half billion, sprawled half way across Asia, where they have lived since the dawn of history. Almost 350 million are rural peoples. In this long period of land use, the destructive forces of land wastage, which have helped reduce China to her present economic condition, despite some measure of soil protection, are working much more rapidly on our farms in America.

China's first settlers found, as did our pioneers, a land comparable in size to the United States and equally well endowed with forested mountains, rich valleys and other natural resources. China dates the periods of her "Golden Age" from 200 B. C. to 1200 A. D. when there was abundance for all and every one was honest. Then why this poverty and decline? One evidence greets the traveler on the ocean, a hundred miles before land is sighted, in the form of a great yellow pathway coming out of the mouth of the Yangtse River as it pours forth the rich silt laden waters from the farm and mountain lands of central China. The Yellow Sea is so named because for centuries the Yellow River has dumped billions of tons of soil from the loess lands and denuded watersheds of north China, until the sea is yellow with China's lost productivity while a portion of her population in the hinterland lives on one or two meals a day.

AMERICA'S FASTER WASTAGE.

The appalling thought that should arouse every thinking person in the United States is that we have exploited and are destroying our natural resources at a rate never before known in the history of the world. It took China several thousand years to exploit and destroy land resources that we have done in from fifty to two hundred years here.

What is this destructive force in China which has also already totally destroyed, here in the United States during our few years of exploitation, over 51 million acres of our good farm land and is in the process of destroying 200 million acres more. It is *SOIL EROSION*, by water and wind. These appalling figures have just been compiled from field studies of the Soil Erosion Service. In China, as well as here, as long as there were new lands to exploit, the farmer moved on as old lands lost their productivity. The Chinese cut the forests in the mountainous regions, not primarily for wood, but to cultivate the rich humus soils which had been centuries in the making. Without vegetative cover, these soils, exposed to torrential rains, washed off as liquid and in from 3 to 20 years according to the steepness. An estimated 12 inches of soil has thus been removed from hundreds of millions of acres from the watersheds of North China by this method of suicidal agriculture, leaving the slopes sterile and barren, a scanty living for sheep and goats. A few temple forests, still reproducing themselves naturally, show that man's destructiveness and not climatic changes have reduced north China to her present condition.

THE YELLOW PERIL OF SILT.

No connection was made by the Chinese between this destruction of hill soils and the increased sudden flooding of rivers in the low lands with the silting up of the irrigation canal systems. They ascribed their floods to the anger of the Gods. Nothing was done, except to build dykes and allow the silt to continue its destruction just as we have been disregarding the silting of our costly irrigation dams in the West. Centuries ago the Chinese began dyking the Yellow River just as we have recently the Mississippi. Periodically the dykes in China break with unthinkable loss of life and property, as in 1851 when the Yellow River changed its course 400 miles. Now the entire Yellow River has again silted until the stream bottom is flowing above the level of the plain, confined only by dykes. An unusual rainy season will bring another catastrophe. Why blame China for ignorance? We have spent altogether almost two billion dollars on the Mississippi and are only now beginning to realize that there must be coordination between flood control on the lowlands and erosion control in the watershed areas.

In China one can see after several centuries what it means to have irrigation systems put out of commission by silt. In the Weipsi, and other places, we found farmers poverty stricken in their struggle to farm regions subject to droughts and severe famines. These had formerly been rich irrigated lands. We saw where they had removed piles of silt twenty times the amount of the original excavation of the canals, before they had given up the fight. Here in the United States we have many millions of acres of our good irrigation lands equally dependent upon reservoirs that are silting up at an alarming rate and when out of commission will reduce these areas to the hazards of dry farming, droughts and famines, as in China. Regarding floods; do you realize that probably the greatest tragedy of human history happened in 1931 in China? Col. and Anne Lindbergh told us of the flood but we were too absorbed with our own depression at that time to understand. Silt and heavy rains were the cause. Dykes broke in the fertile lowlands where 1164 people lived to the square mile. 25,200,000 farm people were driven from their homes and their farms buried under an average depth of nine feet of water, which is about the equivalent of the entire farming population of the whole United States being driven from their homes and their farms buried under an average depth of nine feet of water. The damage was placed at two billion and the drowned estimated at from one-half to two million besides the vast number who died of starvation and disease which always stalk in the wake of such tragedies. You farmers will be interested to know that some of our surplus wheat was sold to China. Besides feeding millions of women and children in refugee camps, it was paid out as wages to two million men who built 3,000 miles of new dykes and by primitive methods moved a quantity of earth into these dykes equivalent to a mound of earth six feet square around the equator.

DUST STORMS PRESAGE DISASTER.

North China has long been known for her fearful dust storms. The Chinese removed nature's vegetative cover from the fine textured soils of north China and they began to blow. (No one who has ever experienced the horrors of these storms can forget them.) Last year, the same forces which wrought havoc in China initiated us to dust storms here in America. We are having a repetition now. This soil wastage by wind erosion can largely be controlled by intelligent treatment as has been proved on demonstration areas of the Soil Erosion Service in the Texas Panhandle. If immediate and thorough steps are not taken to check this monster of wind erosion in our own plains, its raids will continue with ever increasing frequency and severity, and the desert will encroach upon grazing and farm lands of the West.

May the spectacle of China arouse us as a nation to give our lands a new deal before it is too late. We have ruthlessly cut our forests with no thought of sustained productivity. We have overgrazed our hill lands until areas formerly a grazing paradise are now incapable of feeding one head per square mile. Deprived of their vegetative cover, these lands, as well as millions of acres of our sloping farm lands, are in the grip of sheet and gully erosion. Water erosion is like a giant octopus, reaching out its tentacles over our lands, sucking away the moisture and fertility and leaving the lands a wasted heritage for the future generations.

Our golden age of exploitation is passing. There are no new lands to exploit. Either we must save the productivity of our lands from the wastage of soil erosion, or, by neglect or lack of understanding, like the Chinese, condemn ourselves and our posterity to poverty and low standards of living.

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School of Geology of Louisiana State University
and Director, Research Division, Louisiana
Geological Survey

C. K. MORESI, *State Geologist,*
Louisiana Geological Survey,
Department of Conservation

CATAHOULA AND CONCORDIA PARISHES SELECTED AS THIRD AREA FOR SUBJECT OF GEOLOGICAL REPORT

Dr. H. V. Howe, Director of the School of Geology of Louisiana State University, Cyril K. Moresi, State Geologist, and W. D. Chawner, an assistant geologist with the Research Division of the Louisiana Geological Survey recently made a field trip into central and northern Louisiana for the purpose of outlining an area in this part of the state where a geological survey will be made. In pursuance of the general plan of study of the geology of Louisiana by parishes, and as a result of this trip, a study of the geology of Catahoula and Concordia Parishes will be undertaken by Mr. Chawner under the direction of Dr. Howe. The other two areas wherein geological surveys are being conducted are Cameron and Vermilion Parishes, and Plaquemines and St. Bernard Parishes.

The results of a survey and study of the geology and mineral resources of the parishes of Catahoula and Concordia will be of economic, as well as, scientific interest. One of the earliest wells to be drilled for oil in this state was drilled in Catahoula Parish near Leland, east of Harrisonburg, in 1902. Although this attempt was unsuccessful in obtaining gas or oil in commercial quantities, this well, along with subsequent wells drilled in this parish, have given sufficient encouragement to oil prospectors to make this area one of continued interest. Over thirty-five wells have been drilled in Catahoula Parish, the center of interest being near Harrisonburg where petroleum gas was encountered in several wells. Two of these wells might have become commercial producers had they not been lost through accidents at the times of encountering the gas horizons. Now an attempt is being made to salvage one of these wells and make a gas producer out of it. The success of the venture may lead to additional drilling in the area.

Concordia Parish also has been of interest to the oil prospector and no less than twelve wells have been drilled. Most of these wells were located in the northern part of the parish. One of these wells, which was drilled a few miles northeast of Ferriday, was brought in as a gas producer several years ago, indicating a potential field which has not, as yet, been developed any further.

The Catahoula-Concordia area is in a strategic position, offering possibilities for the unraveling of some of the problems of Louisiana stratigraphy and the physiographic history of the Mississippi Valley. Dr. R. J. Russell of the School of Geology began on this latter problem when he determined that Larto Lake, located in southern Catahoula, is an old oxbow lake of the Mississippi River, now far removed from the stream which gave it birth. The historic relationships of the Ouachita, the Tensas, the Black, the Red, and the Mississippi River have not yet been thoroughly studied and it is hoped that this will be an interesting part of the forthcoming studies.

Over Catahoula and extending southwestward through LaSalle and beyond are extensive deposits of high-level gravels whose character, extent, and physiographic relationships will be questions of both economic and scientific interest.

The northwestern corner of Catahoula Parish has been of continued interest to stratigraphers from the very beginning of the scientific studies undertaken in this state and is probably mentioned in more publications than any other portion of the state. This area is the only portion of the state where Oligocene beds outcrop at the surface. It contains outcrops of the Eocene beds from which bones of the large whale-like animal, *Basilosaurus cetoides,* have been removed. Catahoula Parish is the type locality of the Catahoula formation, that much discussed continental formation from which plant fossils and fresh water molluscs have been described, and which becomes marine down-dip under the surface to the south. This marine equivalent of the Catahoula is an important oil producing horizon of the oil fields of the Louisiana Gulf Coast. It contains the famous Chalk Hills, beds of volcanic ash, the only ones known in this state. In spite of all this interest and references in geological literature, there is much disagreement in the literature concerning the actual facts of stratigraphy as here exemplified, and it is thought that accurate mapping and description will be of help to the scientific world.

A RECONNAISSANCE TRIP TO PLAQUEMINES AND ST. BERNARD PARISHES

On the week-end of January 19-20, a party composed of Professors R. J. Russell and F. B. Kniffen, James Ford, and C. E. Broussard, all of Louisiana State University, made a hurried reconnaissance trip through portions of St. Bernard and Plaquemines parishes. The primary purpose of the trip was to gain some first-hand knowledge of the drainage features of the area in their relations to mounds and other evidences of Indian occupation.

After following the course of Bayou la Loutre to Yscloskey the party turned north to Shell Beach. On the return trip the mound group at Yscloskey was briefly examined. The examination revealed four mounds, three of them truncated pyramids composed of earth. The fourth, composed largely of shell, is primarily a midden deposit, which is cut through by the bed of Bayou Yscloskey.

From Yscloskey the route led west to Bayou Terre aux Boeuf, which was followed southward to Delacroix Island. Two probable mounds were sighted along the bayou, but time did not permit visiting them. Some time was spent at a site situated on Wiltz Island, about a half-mile west of Delacroix Island. Here a midden deposit of about an acre in extent and more than five feet in depth revealed an abundance of material in the form of human burials, pottery, shells, and animal remains.

Starting from New Orleans on Sunday the eastern bank of the Mississippi was followed southward to Bohemia. Crossing the river at Pointe a la Hache the west bank of the Mississippi was followed southward to Venice. Return to New Orleans was along the west bank to Gretna. For the route covered along the Mississippi only one site was reported or encountered, that at Pointe a la Hache. In the graveyard north of the village is a mound presumably of Indian origin. Its surface revealed no artifacts, though some sherds were found in the vicinity.

The results of the trip are valuable in that they show a relative abundance of Indian sites associated with what are presumably old discharge channels of the Mississippi to the eastward, and a dearth of sites along the lower course of the present Mississippi.

TOPOGRAPHIC MAPPING OF LOUISIANA

The Louisiana Geological Survey, through the cooperation of the Chief Engineer of the State Board of Engineers, Mr. John Klorer, plans to have the United States Geological Survey map a number of additional quadrangles, with contours, covering certain parishes in Louisiana. The Survey has submitted to the Chief Engineer of the State Board of Engineers, a list of proposed quadrangles to be mapped; covering the western portion of Catahoula Parish and the western portion of LaSalle Parish, DeSoto and Sabine Parishes, and portions of Livingston, East Baton Rouge, and East Feliciana Parishes.

In addition to the geological reports which are being prepared on the parishes of Cameron and Vermilion, and Plaquemines and St. Bernard the Louisiana Geological Survey has begun preparing a geological report of Catahoula and Concordia Parishes. With the exception of the western portion of Catahoula Parish, quadrangles with five-foot contour intervals have been prepared and published by the Corps of Engineers of the War Department of this entire area. As soon as contoured quadrangles of the latter two areas, that is, DeSoto and Sabine, and Livingston, East Baton Rouge and East Feliciana, are completed, the Louisiana Geological Survey plans to begin geological investigations of these areas. It is impossible to conduct thorough geological surveys of certain areas without accurate, contoured maps.

Louisiana has been fortunate in that a large portion of the state has been mapped with contours through funds appropriated by Congress in the Flood Control Act of May, 1928. Topographic

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mapping of the alluvial valley of the Mississippi River, from Cario, Illinois, to the Gulf of Mexico, began in April, 1930, and was completed in 1932. The mapping of this area was under the direction of the Corps of Engineers of the War Department, and the total sum spent for 172¾ contoured quadrangles amounted to $845,392.08. Some $350,000.00 of this total sum was expended for mapping and publishing 71 quadrangles in Louisiana. These quadrangles were mapped without cost to the State of Louisiana.

The Louisiana State Board of Engineers has an arrangement with the United States Geological Survey to map some sixty-three quadrangles. Most of these quadrangles are located in the tidal marsh lands of South Louisiana and will not be contoured. Seventeen of these quadrangles have been completed, while the remaining forty-six will be completed by June 1935. However, none of the quadrangles so far completed through this arrangement is contoured.

Should arrangements be made with the United States Geological Survey through the Louisiana State Board of Engineers, whereby contoured quadrangles can be completed of the entire State, the Louisiana Geological Survey's program of preparing and publishing geological and mineral resources reports on each parish in Louisiana will be greatly accelerated.

Dr. R. J. Russell Appointed Visiting Professor for the Summer Session at Harvard

Professor Richard J. Russell will interrupt, for a brief period of six weeks, his field work this summer on the lower part of the Mississippi Delta, where he is conducting geological investigations for the purpose of preparing a Geological Bulletin on Plaquemines and St. Bernard Parishes. Dr. Russell will spend six weeks at Harvard University, where he has been appointed visiting Professor of Geology for the Summer Session July 1 to August 10.

Dr. Kay of University of Iowa Gives Interesting Lecture On the Geology of Iowa During the Glacial Period

Dr. George F. Kay, for many years the Director of the State Geological Survey of Iowa, Head of the Department of Geology, and Dean of the College of Arts and Sciences at the University of Iowa, was the guest of the Graduate School and the School of Geology, Louisiana State University, on February 18. At noon he was the guest of honor at a graduate luncheon and spoke on his experiences as the Dean of a rapidly growing college. In the evening he lectured on the Geology of Iowa during the Glacial Period, his main topic of research for the past thirty years. The lecture was particularly interesting for the reason that the great quantities of material scooped from Iowa and adjacent states during the periods of active glaciation have, in the main, been deposited in Louisiana and now repose as parts of the Mississippi Delta and adjacent marshes.

Professor Craft Attends Annual Meeting of A. I. M. E.

Benjamin C. Craft, Assistant Professor of Petroleum Engineering, Louisiana State University, attended the New York meeting of the American Institute of Mining and Metallurgical Engineers, February 18-21, where he presented two papers entitled Oil and Gas Development in Louisiana and Oil and Gas Development in Mississippi. Mr. Craft was also vice chairman of the symposium on oil production in the United States. The Institute honored Mr. Craft by electing him to Associate Vice Chairman of Oil Production for 1935. He will have charge of all the domestic production papers to be presented at the symposium next year.

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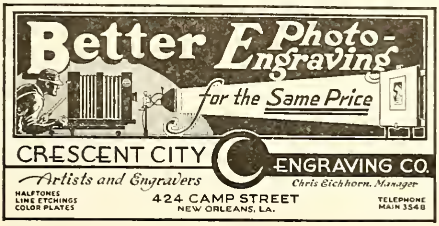

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STATE PARKS COMMISSION OF LOUISIANA BEGINS ITS IMPORTANT DUTIES

(Continued from Page 2)

accord with these facts, and there are thus represented on the State Parks Commission the Department of Conservation, the Louisiana Highway Commission, the State Land Office and the State Board of Engineers.

"Inasmuch as these four major State agencies, composing the State Parks Commission, are called upon to carry out the intent of the Act, the appropriations of these respective agencies should be increased by a reasonable amount, allocated expressly for park purposes.

"LOCAL COMMITTEES DESIRABLE

"Success in carrying into action the purpose of the State Parks Projects will undoubtedly be greatly aided by the formation of local advisory committees. It is suggested that a membership of five would probably best fulfill the requirements, and it is further suggested that of these five, two might be chosen by local civic bodies, and three appointed by the State Parks Commission.

"Although various citizens of the community might well serve on such committee, a probable ideally appointed membership would be the Superintendent of Schools, the President of the Police Jury and the Assessor. The Superintendent of Schools would be well familiar with the recreational needs of the community, the Assessor would have a thorough knowledge of available lands and their value for recreational purposes, while the President of the Police Jury could most favorably further represent local public opinion.

"It is highly desirable to indicate that the successful creation of the Commission has been to an exceptional degree due to the interest and activity of the Secretary of the Louisiana Department of Conservation, Mr. James P. Guillot, assisted by Mr. Armand P. Daspit, Director of the Wild Life Division of the Louisiana Department of Conservation, Mr. N. E. Simoneaux of the Fisheries Division of the Louisiana Department of Conservation and Representative C. A. Morvant, who introduced the Act."

Mr. John Klorer, Chief State Engineer and Vice-Chairman of the State Parks Commission provided a comprehensive statement of the Commission's policies:

"While the Louisiana State Parks Commission is at present, figuratively speaking, an infant in swaddling clothes, it is destined to be a most important State Agency in the future when it will have attained full growth and maturity.

"Louisiana, with its extensive forests and with bayous or lakes lying in every Parish of the State, offers innumerable ideal locations for development of State Parks and Recreational Centers. In addition, the colorful history of the State supplies many locations of special interest to citizens of our own State, as well as to visitors, around which locations may be developed Park Areas of perhaps smaller dimensions than generally desired, but nevertheless offering outdoor attractions to numerous persons.

"The State Parks Commission begins its work possessing two such localities of the last mentioned classification, namely—Fort Pike—guarding the entrance into Lake Pontchartrain at the Rigolets, and Fort McComb—doing similar duty at the Chef Menteur. These two Forts with surrounding acreage were acquired by the State of Louisiana and transferred to the jurisdiction of the State Parks Commission by proclamation of Governor Oscar K. Allen. These proposed Parks, when developed, will be reached by one of Louisiana's fine paved highways, U. S. No. 90, or better known as the Old Spanish Trail, and will offer in addition to the camping and picnic facilities unusual boating, fishing and bathing advantages.

"Several areas susceptible of being converted into State Parks and having adequate acreage are presently owned by the Louisiana Conservation Commission in localities adjacent to the State Fish Hatcheries. The transfer of these properties to the State Parks Commission will, no doubt, come in time, but to achieve the full measure of success, the State Parks Commission will have to depend on other means of acquiring property than by donation. It will necessarily have to be supplied with funds by State Appropriation, or otherwise, to acquire by purchase those sites or localities possessing outstanding scenic advantages and which at the same time will not be lacking in facilities for active recreation."

SAFETY FIRST FOR FISHERMEN

(Continued from Page 1)

Sport fishing is often most successfully practiced in broad, relatively shoal waters, areas characteristically subject to sudden and violent agitation by winds. Every fisherman can recall how such a calm stretch of shallow bay will, whipped by a sudden rain squall, become in a very few minutes seriously dangerous. When, in addition to this, the boat is frequently quite lightly powered with an out-board motor, the construction of which may render it susceptible to ignition trouble when drenched with rain, the need for life saving equipment aboard every sport fisherman's boat is doubly evident.

Commercial houses now offer a wide variety of life belts and similar devices representing a wide and adaptable range in price. The cost of life saving equipment, in comparison with the cost of highly specialized fishing gear, represents so small a fraction of the total sum invested in fishing pleasure that it is appalling to observe how often valuable human lives are imperilled for such a relatively trivial consideration. Furthermore, even in the event of squalls, there usually exists a sufficient interval of time for those on board a boat to prepare for the emergency.

It is notorious that in such tragic accidents too often the boat is swamped so close to shore that safety seems almost within grasp. Since in our Louisiana waters there is no evidence whatever of any danger from sharks, the aid given by any adequate type of life belt would, in almost every such instance, enable the victims of an accident to be saved, even if unable to swim.

The Department of Conservation wishes to bring these facts forcibly to the attention of our innumerable Louisiana sportsmen so that the probability of repetition of such a deplorable tragedy as that which recently occurred may be anticipated and avoided.

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Louisiana Nature Guardians

"Upon my honor, as a Louisiana Nature Guardian, I promise to take care of all our natural friends, to guard and protect them to the best of my ability, and as far as possible influence others to do the same."

HOW YOU CAN BECOME A NATURE GUARDIAN

YOUR PART

Consult your teacher.

Ask that the purpose and plans of the Nature Guardian Club be explained to you and the class.

Ask for an application card.

Get a responsible person to indorse it, after proving that you fully understand the duties of a Nature Guardian.

Sign the application and mail the card postpaid, or give to your teacher, to send with cards from all the class.

OUR PART

We send the application card.

We send you a handsome badge, a certificate of membership, Nature Guardian pamphlets, and other literature.

This is all free, and is carried on with the purpose of instilling in the children's minds a knowledge of Louisiana's wild life and a thorough understanding of its economic value to the State.

It also aims to develop individual humanitarianism. Even within this short time an amazing improvement has been made in the mental attitude of our young folks toward the conservation and protection of Louisiana's natural resources.

EDITORIAL

MY DEAR GUARDIANS:

I wonder if our Guardians fully appreciate the natural beauty and wealth of our State? In Louisiana there are untold opportunities offered for recreation which are just being adequately brought before the public by the new State Parks Commission lately formed for the purpose of utilizing our vast areas for such recreational activities as hunting, fishing and camping. These activities are those of the helpful type that are appealing to an ever increasing class of out door enthusiasts.

No one should enjoy these pleasures more than our Nature Guardians. Their training in their Clubs should make them especially keen for all such activities. Whenever possible they should avail themselves of any opportunity offered to attend one of the various summer camps in the State, such as those sponsored by the Boy and Girl Scouts, the Y. M. C. A. and the Y. W. C. A., the Campfire and the Rainbow Girls, and other organizations. Sometimes a group of family friends can arrange to spend a few days or even a week in the woods, where they will have a chance to satisfy their love for Nature's beauties of woods and fields, and learn more about the flora and fauna of their native state.

So, my dear Guardians, begin to plan now toward your out door summer holiday. In every instance the cost of such an outing is very small, and the return in health, profitable leisure hours, and nature lore, very great.

With best wishes for all the Guardians, I am,

Cordially yours,

THE EDITOR.

Another little letter from that faithful Club in Franklinton:

Franklinton, La.,
Jan. 24, 1935.

DEAR EDITOR:

We are enjoying our Nature Guardian work so much. I am sending you some application cards filled out, and wish you would send us some blank ones.

Thanking you for all your kindness,

Yours truly,

LURLINE SMITH,
Sec. N. G. Club.

I want to welcome this new Club from Monroe, La. I think it is a fine thing for Edith to form such a large Club, don't you Guardians?

2708 Dick Taylor St.,
Monroe, La.

EDITOR NATURE GUARDIAN CLUB,
N. O., La.

DEAR EDITOR:

I am anxious to join your Club, and so are my classmates. There are twenty-six of us. We read your offer in a Louisiana book. We are studying about Louisiana. I am in the sixth grade. We would like to have the badges and application cards as soon as possible. I thank you very much and promise not to harm any birds or to hurt any of our natural friends.

Yours truly,
EDITH VENABLES.

Here is a letter from a friend in Missouri, who wishes to join our Club. We welcome her into our ranks and are making her an Honorary Member. This is what she says:

2000 Spanish Drive,
Brentwood, Mo.

DEAR EDITOR:

I would like to join your Club. I have been reading your magazine for quite some time and each issue seems twice as interesting. I have hesitated in joining because I live in Missouri, but there are quite a few wild animals, trees, birds and flowers like those in Louisiana here. Please send me an application card.

Yours truly,
VIRGINIA BRINKMAN.

The Nature Guardians are doing fine work in Quitman, La.

Quitman, La.,
Beech Spring High School,
Feb. 10, 1935.

DEAR EDITOR:

I am sending you a copy of one of our Nature Guardian programs and a poem that was written by a fifth grade pupil.

I hope you will find the program and poem interesting enough to publish in your magazine.

Yours truly,
CALLIE MAE EWING, *Teacher.*

PROGRAM

HOW TO PROTECT OUR FORESTS

TALK: "Some Enemies of Our Forests."
READING: "How Our Forests Are Protected."
POEM: "Shades."
TALK: "How Our Forests Protect Us."
POEM: "To Him Who Planted a Tree."
SONG: "Trees."

JANUARY

By Opal Smith

It's snowing and sleeting
On this January day,
The snow birds go flying—
Trembling and flying away.

The small flakes go flying
And dancing and whirling,
We shall go skating—
Around and round whirling.

The snow is pretty now
But how long will it last?
To-morrow the sun will shine
And the fun will be past.

We think that is a pretty little poem, and we are glad to print it . Won't some other Guardians send us in poems about our birds, trees or flowers?

WHY BIRDS FEAR MAN

BY AMBROSE DAIGRE,
Department Taxidermist,
Department of Conservation of Louisiana

If you went to a country, sparsely settled by humanity, for the purpose of studying its avifauna, you would readily observe its birds to have very little instinctive fear of man.

Man has made himself Nature's arch enemy. Historical records reveal that he has been a slaughterer of bird and beast from early primitive ages.

God endowed birds with an instinct to flee from predatory foes. A creature can live in Nature only if it has the ability to flee from danger and is fit to survive; for instance a crippled quail would be easy prey to the agile talons of a raptorial bird; a disabled hawk would, in turn, fall victim in the gnashing teeth of a feline. This we term "Nature's Balance" or "Survival of Fittest," but when we consider man with his intelligence against the instinct of the fauna, there is neither "Natural Balance" nor "Survival of the Fit." The human animal, to speak generally, can exterminate all Nature if he so wills. The more often a bird is preyed on by a certain class of predator, the keener his instinct becomes to flee from this foe; hence birds have a keen instinctive fear of humanity.

Under protection, even with this fear, birds are soon to realize it and in many cases some of our most timid feathered friends have been known to feed from the hand. There are examples of this kind on Louisiana Game Preserves. Audubon Park has a striking example of the Lesser Scaup Duck, a well known migratory species to Louisiana. Several individuals spend the winter months in the park lake and have become tame enough to beg food from park visitors. Three migrant Swans, as wary as they are, were observed resting in this lake.

Through the purchase of shot-guns and rifles, as seasonal gifts, many parents encourage their

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children to slaughter birds. I particularly noticed this to be a condition conspicuously prevalent throughout Louisiana during the Christmas holidays, when many boys are trying out their new fire-pieces to the ruthless destruction of our beautiful insectivorous birds.

This article is intended for Nature Guardian Parents and Teachers, hoping that through their training in, and teaching of Conservation, our children will be raised in a realization that Wild Life is beautiful, beneficial and has a direct bearing on our very existence.

Will we continue to give cause to this fear that our lovely birds have of us?

CELEBRATE BIRD DAY

The Department of Conservation urges that all schools observe a Bird Day, so that the beauty, usefulness and need for protection of our birds be brought appropriately to the attention of all students.

Friday, April 26th, would be the right time of the year for this celebration, since at that time our feathered friends that have spent their winter farther south are already on their way back to us again, while many of those birds that move farther north for the summer may still linger.

The Nature Guardian Editor suggests the following program as one way of Bird Day observance. The program can naturally be altered in any way to suit local talents and local contributions on the part of both students and teachers.

SUGGESTED PROGRAM FOR BIRD DAY

1. Song: "America, the Beautiful".
2. Reading: "Some Helpful Suggestions to Bird-house Builders".
3. Recitation: "The Sandpiper".
4. Reading: "The Value of Birds to Agriculture".
5. Recitation: "The Throstle".
6. Reading: "What Can Nature Guardians Do to Increase Bird Life in the Community"?
7. Recitation: "In June".
8. Reading: "What the New State Parks Will Do toward Preserving Bird Life".
9. Song: "Dixie".

BLACK-LOCUST SEEDLINGS IN LA.

(Continued from Page 10)

conjunction with other agencies, this population was great enough to cause a loss of more than 80 per cent of the stock.

At Holly Springs, Miss., in the C. C. C. nurseries, where black locust is grown on a large scale, examinations by the junior author in August and September, 1934, revealed but slight tree-hopper injury. At this location the tree is within its natural range.

The occurrence of typical tree-hopper injury to the stems of black-locust seedlings, as well as of a typical injury to the petioles, high on the plant, was also observed at Perkinston Junior College, Perkinston, Miss., on September 7. At this late date only one adult membracid was observed. It was the same species responsible for the damage at Woodworth, La.

It is possible that the tree hopper can be controlled in the following way: (1) Pretreat the seed to obtain a more rapid and even germination; (2) practice clean culture, and burn the weeds and grass inside of the nursery fence and the oak sprouts outside to a distance of a mile or more; and (3) do not grow green manure crops near the nursery. Experiments with sprays indicate that contact poisons or sticky or glazed mechanical repellents are impractical even under experimental conditions, and would be more impractical on large-scale operations using unskilled labor, even with the best type of spraying equipment.

It is apparent that *Stictocephala festina* Say, as well as other insects, will present a serious problem in the growing of black-locust seedlings under present nursery conditions. Black locust has never been grown on such an extensive scale in this area before and, in consequence, nothing is known of the habits of this tree hopper or other potentially serious insects. The information in this note is presented to the attention of others to whom is entrusted the problem of growing black locust, so that they may be on the alert for the typical gall-like callus and girdle on the stems of young black-locust seedlings, study the habits of the insect, and conduct experiments for its control.

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WILDLIFE SITUATION

(Continued from Page 8)

That fact was made surprisingly apparent in the marked shortage among Black Ducks and the divers this year.

The destructive winter was followed by an unprecedented drought, which sterilized the duck nesting and breeding areas as far north as Winnipeg.

The fall hunting season on ducks was so bad in many regions that consternation seized the sportsmen in many broad areas. Consternation is justified, but methods of treatment must be based on facts.

Emergency funds, which have been secured by sometimes disagreeable measures, are being spent in the hereditary nesting grounds on a program of restoration. Of the estimated 17,000,000 acres of former breeding grounds drained and diverted to unprofitable agriculture we hope to put 600,000 acres back during the year. It is a most thrilling and practical program. But bear in mind that 600,000 acres will not be fully operative unless we have nesting ducks to occupy them, and there are still hazards in the way of accomplishing even the retirement of 600,000 acres.

I hope it is but the beginning and that it will so demonstrate the practicability of this method of attacking the duck shortage that Federal funds may be found to carry on the program from year to year until we have a dependable supply.

Now the only controllable element affecting the duck population is the annual kill by the guns of sportsmen. Whatever your personal interests and local conditions, I hope we may be favored with your sympathy and your confidence that we are doing a hard job with all the honesty and sincerity of purpose which is in us.

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SOUTH DAKOTA SAYS "THANK YOU"

The following letter from Mayor Rothschild of Madison, South Dakota, is typical of hundreds of appreciative letters the Department of Conservation receives as response to the *Louisiana Conservation Review*:

THE LEAGUE OF SOUTH DAKOTA MUNICIPALITIES
Madison, South Dakota,
February 13, 1935.

Mr. James P. Guillot,
New Orleans, La.

Dear Mr. Guillot:

I have, for a long time, wanted to congratulate the Louisiana Conservation Commission on your splendid magazine *"Louisiana Conservation Review."*

You not only cover a wonderful lot of subjects of extreme interest but you show the citizens of the United States your unlimited resources. I find it not only most interesting but very, very educational.

Thank you for continuing my name on your mailing list.

Very cordially,
W. A. ROTHSCHILD, *Mayor*,
Madison, South Dakota.

WESTERN APPRECIATION OF THE *Review*

The following letter from the Honorable Ernest N. Hutchinson, Secretary of State of the State of Washington, indicates the esteem in which the *Louisiana Conservation Review* is held:

DEPARTMENT OF STATE
Olympia,
State of Washington
February 22, 1935.

Louisiana Conservation Review,
New Orleans, Louisiana.

Gentlemen:

I thank you very much for the January number of your quarterly which has just reached me. . . .

I have the October 1934 issue. I would be very grateful for the three other issues of 1934. Even for those of 1933, if you have extra copies that you could spare.

This is one of the best State publications that I have among my files, and I like to have the files as complete as possible.

Gratefully,
ERNEST N. HUTCHINSON,
Secretary of State.

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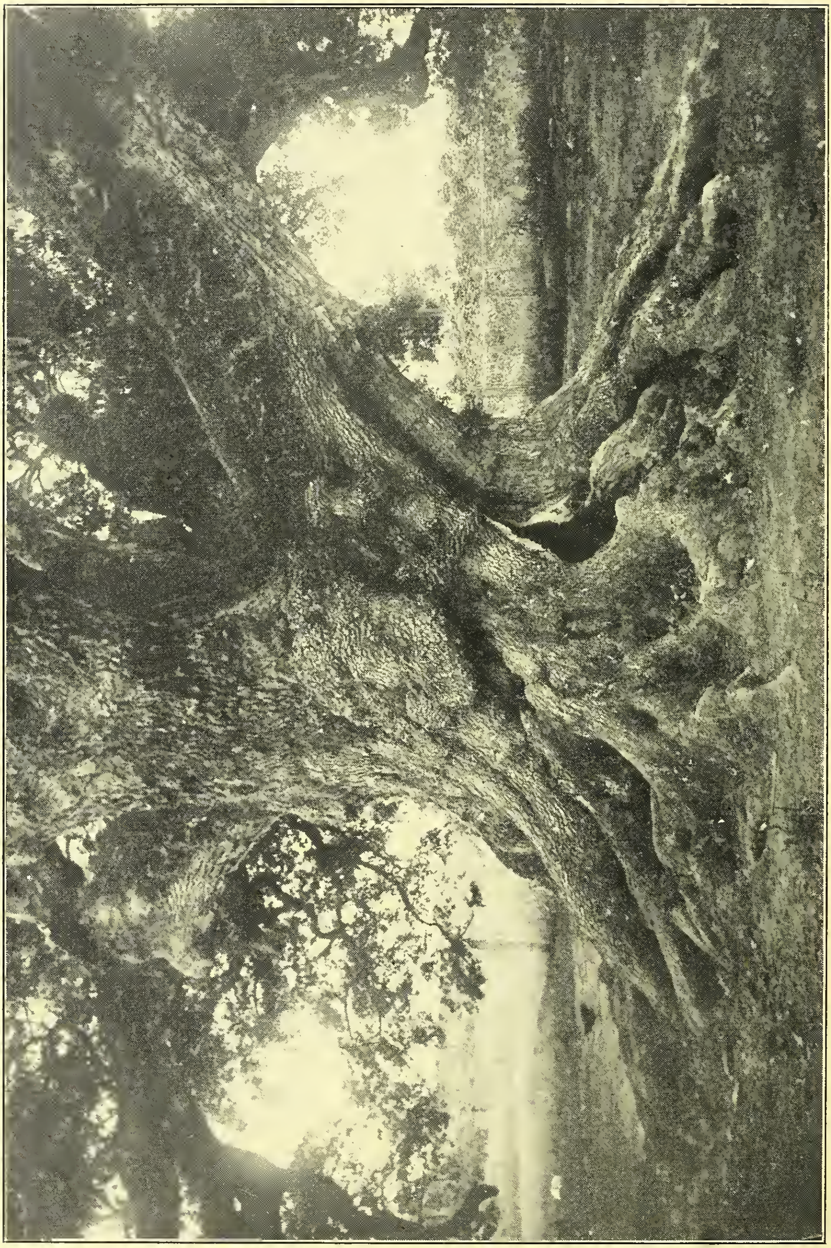

A Close View of the Locke Breaux Live Oak near Hahnville, Louisiana. This Magnificent Tree Is President of the Live Oak Society Founded by Doctor Stephens in This Issue of the Louisiana Conservation Review.

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